

PMC

PAID TEST

CHAPTERWISE



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**FREE EBOOK
FOR STUDENT**

FORCE AND MOTION

1 Acceleration in the Simple pendulum is always _____ to displacement

- A. inversely proportional
- B. directly proportional
- C. acting negative**
- D. independent

2 Acceleration of an object is defined as the rate of change of

- A. displacement
- B. time
- C. velocity**
- D. distance

3 Mass m_1 has a velocity of 0 m/s and mass m_2 has a velocity of 5 m/s . Mass $m_1 > m_2$. Which one has larger interior?

- A. m_2
- B. m_1**
- C. both m_1 and m_2
- D. not enough information

4 Rate of change in displacement is known as:...

- A. speed
- B. velocity**
- C. acceleration
- D. momentum

5 Instantaneous velocity is defined at

- A. particular displacement
- B. instant acceleration
- C. instant time**
- D. average time

6 Average speed of a object after a completing a circle of 5 m radius in 5 seconds

- A. 2π**
- B. π
- C. zero
- D. 10π

7 Displacement of object with respect a constant moving(v) frame in same direction is

- A. $x-vt$**
- B. $x+vt$
- C. x
- D. $x+vt+at^2$

8 Acceleration of object which starts rest to reach 20 m/s in 10 sec is

- A. 2 m/s^2**
- B. 10 m/s^2

C. 1 m/s^2

D. 2 m/s^2

9 When a particle is launched at angle 90° with respect to horizontal then vertical acceleration is

- A. -9.8 m/s^2**
- B. 9.8 m/s^2
- C. 0
- D. 5 m/s^2

10 Centrifugal force is a

- A. real force
- B. friction force
- C. pseudo force**
- D. none of these

11 Consider a car is travelling for one hour. Which of the following cases has the greatest average velocity in east-direction?

- A. car travels 20 km due east
- B. car travels 60 km due east, then turns around and travels 40 km due west
- C. car travels 70 km due east**
- D. car travels 30 km due west, then turns around and travels 30 km due east

12 The unit of velocity is:...

- A. m
- B. m s
- C. m / s**
- D. m / s^2

13 Displacement of an object in moving around a complete circle is

- A. $2\pi r$
- B. $2r$
- C. πr
- D. zero**

14 If a squash ball comes back to its starting point after bouncing off the wall several times, then:....

- A. its total displacement is zero but its average velocity is non-zero
- B. its total displacement is non-zero but its average velocity is zero
- C. both its total displacement and its average velocity is non-zero

FORCE AND MOTION

D. its total displacement is zero and so also is its average velocity

15 Consider a car is travelling for one hour. Which of the following trips have the same average velocity?

A. car travels 20 km due east and car travels 70 km due east

B. car travels 40 km due east, then turns around and travels 20 km due west and car travels 20 km due east

C. car travels 70 km due east and car travels 40 km due east, then turns around and travels 20 km due west

D. car travels 30 km due west, then turns around and travels 30 km due east and car travels 40 km due east, then turns around and travels 20 km due west

16 If a car starts from rest and reaches 20 m/s velocity in 10 m distance then acceleration is

A. 20 m/s²

B. 10 m/s²

C. 5 m/s²

D. 2m/s²

17 Consider a displacement-time graph of an object moving along x-axis. Then negative gradient of the graph represents:...

A. velocity in x-direction

B. velocity in negative x-direction

C. acceleration in x-direction

D. acceleration in negative x-direction

18 If a car is travelling eastward and slowing down, what is the direction of acceleration?

A. eastward

B. westward

C. neither eastward nor westward

D. we can not answer with this data

19 An object moves 20 m towards east and then 10 m towards west, in 5 sec. What is its average velocity and average speed?

A. speed = 6 m/s velocity = 2 m/s

B. speed = 6 m/s velocity = 6 m/s

C. speed = 2 m/s velocity = 2 m/s

D. speed = 2 m/s velocity = 6 m/s

20 At the highest point of trajectory which of the following quantities is zero

A. horizontal velocity

B. total velocity

C. vertical velocity

D. none of these

21 Acceleration is always _____ for a freely falling body

A. positive

B. negative

C. zero

D. none of these

22 The value of acceleration due to gravity on earth is

A. 5 m/s²

B. 6m/s²

C. 15m/s²

D. 9.8 m/s²

23 Acceleration due to gravity near earth is

A. nonuniform

B. uniform

C. decreasing with distance

D. increasing with time

24 A motion with increasing velocity can be represented on displacement-time graph by:...

A. a horizontal line

B. a curve line with decreasing gradient

C. a straight line with constant gradient

D. a curve line with increasing gradient

25 Which of the given motion is a type of 2D motion

A. Circular

B. Pendulum motion

C. Projectile motion

D. All of these

26 If displacement-time graph is a curve, which of the following is correct:....

A. area under graph represent displacement

B. gradient of the graph is constant

C. gradient of the tangent of graph represents acceleration

D. gradient of the tangent of graph represents velocity

27 SI unit of acceleration is:...

A. m

B. m²

FORCE AND MOTION

- C. m/s
D. m/s²
- 28 If we are moving with constant velocity frame then the inertial state is same as
A. rest frame
 B. accelerating frame
 C. non-inertial frame
 D. All of these
- 29 The distance and displacement can be equal if...
 A. an object moves on a circular path
 B. an object oscillates
C. an object moves in a straight line
 D. an object moves on a parabolic path
- 30 if velocity varies with time in quadratic manner then acceleration
 A. constant
 B. zero
C. linearly varying
 D. varies as t^3
- 31 Rate of change of displacement with respect to time is
 A. acceleration
B. velocity
 C. speed
 D. power
- 32 If one body is at rest then if we try to move it then it will resist by
 A. inertia of motion
B. inertia of rest
 C. inertia of turning
 D. inertia of acceleration
- 33 Acceleration of earth around sun in its orbit is always
A. tangential
 B. radial
 C. zero
 D. none of these
- 34 A projectile is launched with vertical Kinetic energy K at angle θ then its variation with kinetic energy K_0 is
A. Parabolic
 B. periodic
 C. hyperbolic trajectory
 D. linear
- 35 For a car which applies brakes from 10 m/s to stop the car in 10 sec its acceleration is
 A. 1 m/s²
 B. 2 m/s²
C. -1 m/s²
 D. -2 m/s²
- 36 Projectile motion of object on earth is always
 A. linear
B. parabolic
 C. cubic
 D. inverse
- 37 instantaneous velocity for a displacement function $d(t) = 2 - 2t$ at any time is given by
 A. $-2t$
 B. $2t$
 C. 2
D. -2
- 38 The displacement is a:..
A. vector quantity
 B. scalar quantity
 C. neither vector nor scalar quantity
 D. dimensionless quantity
- 39 Newton's first law falsified
 A. Galileo theory
B. Aristotle theory
 C. Einstein's theory
 D. Maxwell's theory
- 40 Projectile when launched at 90 degree with respect to horizontal then its trajectory is
 A. Parabolic
 B. periodic
 C. hyperbolic trajectory
D. linear
- 41 In which case, the object is speeding up:....
 A. velocity is positive acceleration is negative
B. velocity is negative acceleration is negative
 C. velocity is negative acceleration is zero
 D. velocity is negative acceleration is positive
- 42 The acceleration is a:....
A. vector quantity
 B. scalar quantity
 C. dimensionless quantity
 D. none of these

FORCE AND MOTION

43 An object moves 20 m in 5 sec. What is the gradient of the displacement-time graph?

- A. 25
- B. 15
- C. 4**
- D. $\frac{1}{4}$

44 Instantaneous velocity is defined as

- A. $\frac{dx}{dt}$**
- B. $\frac{\Delta x}{\Delta t}$
- C. $\Delta x \cdot \Delta t$
- D. $\Delta v / \Delta t$

45 In which situation, distance is three times than its displacement?

- A. object moves and come back to its initial position
- B. object moves 20 m towards east and 10 m towards west**
- C. object moves 20 m towards east and 10 m towards south
- D. object moves 20 m towards north and 10 m towards west

46 A motion with constant velocity can be represented on displacement-time graph by:...

- A. a horizontal line
- B. a curve line with decreasing gradient
- C. a straight line with constant gradient**
- D. a curve line with increasing gradient

47 Acceleration of a moving train when it start its motion is

- A. negative
- B. zero
- C. positive**
- D. infinite

48 A car travels 30 m toward east, then it takes turn and travels 40 m towards west. It takes 50 seconds. Its average velocity is:....

- A. -10 m/s
- B. -1/5 m/s**
- C. 7/5 m/s
- D. -5 m/s

49 The displacement between A and B is defined as:...

- A. change in position of an object from A to B**
- B. any distance between two points

C. longest distance from A to B

D. longest distance between two points

50 For a straight trajectory of a particle instantaneous velocity is

- A. 2*(average velocity)
- B. average velocity**
- C. zero
- D. not enough info

51 Vector is quantity which

- A. has direction
- B. has magnitude
- C. follow rules of vector addition**
- D. both direction and magnitude

52 Speed is a

- A. tensor
- B. vector
- C. scalar**
- D. None of these

53 average velocity is defined as

- A. displacement/time**
- B. distance/time
- C. distance*time
- D. displacement*time

54 Newton's second law states that the rate of change of _____ is equal to external force

- A. velocity
- B. Mass
- C. momentum**
- D. position

55 1 light year distance is

- A. distance travelled by earth in one year
- B. distance travelled by star in one year
- C. distance travelled by light in one year**
- D. distance travelled by light in one galactic year

56 Decrease in velocity per unit time is called

- A. acceleration
- B. positive acceleration
- C. deceleration**
- D. uniform acceleration

57 If a projectile is launched with 3m/s velocity at 60 degree angle then at highest point its horizontal velocity is

- A. 3 m/s
- B. 2m/s
- C. 1.5 m/s**

FORCE AND MOTION

D. 1.8 m/s

58 Acceleration of rolling object is zero at _____ point of hill

A. highest

B. lowest

C. middle

D. none of these

59 If displacement-time graph is a curve, which of the following is correct:....

A. area under graph represent displacement

B. gradient of the graph is constant

C. gradient of the tangent of graph represents acceleration

D. gradient of the tangent of graph represents velocity

60 Displacement is a

A. Atensor

B. vector

C. scalar

D. None of these

61 What is the FPS unit of displacement

A. kilometer

B. meter

C. Foot

D. Pound

62 If displacement-time graph is a curve, which of the following is correct:....

A. area under graph represent displacement

B. gradient of the graph is constant

C. gradient of the tangent of graph represents acceleration

D. gradient of the tangent of graph represents velocity

63 Acceleration describes how:....

A. speed is changing

B. the speed and force are changing

C. the speed and direction of motion are changing

D. the direction of motion are changing

64 People sitting in a moving bus experience a jerk when the bus stops. This is due to _____

A. inertia of motion

B. inertia of rest

C. inertia of turning

D. inertia of acceleration

65 Projectile motion has _____ acceleration at each point of trajectory

A. variable

B. constant

C. zero

D. none of these

66 If the velocity varies linearly with time then acceleration is called

A. nonuniform

B. discrete

C. instantaneous

D. uniform

67 We can calculate velocity of an object from displacement-time graph by:...

A. calculating area under the graph

B. finding gradient of displacement-time graph

C. calculating area above the graph

D. finding the length of the graph

68 An object is moving at constant speed, which of the following is always true:...

A. distance is greater than displacement

B. distance is lesser than displacement

C. distance is equal to displacement

D. we cannot answer

69 When a stone is thrown horizontally with 2 m/s from a building of height 5 m then just before hitting ground its acceleration is

A. 12 m/s²

B. 13 m/s²

C. 9.8 m/s²

D. 7.6 m/s²

70 Centrifugal acceleration of a car moving around in a circle of radius 5 m with 10 m/s velocity

A. 20 m/s²

B. 10 m/s²

C. 6 m/s²

D. 11 m/s²

71 Instantaneous velocity is defined at

A. particular displacement

B. instant acceleration

C. instant time

D. average time

72 The SI unit of velocity is

A. m/s

FORCE AND MOTION

- B. $1/s$
 C. m/s^2
 D. m/s^3

73 Circular motion of a particle while attached to a string centripetal acceleration is provided by

- A. Tension in string
 B. gravitational force
 C. Normal force
 D. none of these

74 Projectile when launched at 90 degree with respect to horizontal then its trajectory is

- A. Parabolic
 B. periodic
 C. hyperbolic trajectory
 D. linear

75 A car travels 30 m toward east, then it takes turn and travels 40 m towards west. It takes 50 seconds. Its average velocity is:....

- A. -10 m/s
 B. $-1/5 \text{ m/s}$
 C. $7/5 \text{ m/s}$
 D. -5 m/s

76 If an object moves with constant velocity then its acceleration is

- A. zero
 B. nonzero
 C. infinite
 D. none of these

77 Acceleration of earth around sun in its orbit is always

- A. tangential
 B. radial
 C. zero
 D. none of these

78 If the velocity of an object is increasing with time then acceleration is

- A. negative
 B. positive
 C. zero
 D. none of the above

79 The value of acceleration due to gravity on moon is _____ of earth

- A. $1/4$ th
 B. $1/10$ th
 C. $2/3$ rd
 D. $1/6$ th

80 If we are moving with constant velocity frame then the inertial state is same as

- A. rest frame
 B. accelerating frame
 C. non-inertial frame
 D. All of these

81 When a stone is thrown horizontally with 2 m/s from a building of height 5 m then just before hitting ground its acceleration is

- A. 12 m/s^2
 B. 13 m/s^2
 C. 9.8 m/s^2
 D. 7.6 m/s^2

82 The acceleration of a moving object can be defined as:....

- A. rate of change in speed
 B. rate of change in velocity
 C. rate of change in distance
 D. rate of change in displacement

83 Centripetal acceleration always acts _____ the center

- A. away
 B. towards
 C. normally
 D. tangentially

84 Displacement of an object in moving around a complete circle is

- A. $2\pi r$
 B. $2r$
 C. πr
 D. zero

85 Newton's first law falsified

- A. Galileo theory
 B. Aristotle theory
 C. Einstein's theory
 D. Maxwell's theory

86 In which case, the object is speeding up:....

- A. velocity is positive acceleration is negative
 B. velocity is negative acceleration is negative

FORCE AND MOTION

- C. velocity is negative acceleration is zero
 D. velocity is negative acceleration is positive

87 Displacement of sun with respect to earth is

- A. r
 B. $2\pi r$
 C. $2r$
 D. r^2

88 instantaneous velocity is

- A. always positive
 B. always negative
 C. positive and negative
 D. not enough info

89 If displacement = 15 m and time $t = 10$ seconds, then average velocity is

- A. 12.5 m/s
 B. 1.5 m/s
 C. 2.5 m/s
 D. 3m/s

90 Velocity is defined as:....

- A. distance divided by the time during which the displacement occurs
 B. distance travelled in a specific direction
 C. displacement divided by the time during which the displacement occurs
 D. displacement travelled in a specific direction

91 Vertical velocity vs time graph for a projectile motion

- A. varies linearly
 B. follows a parabolic path
 C. is constant
 D. is nonlinear

92 When an object moves on a circular path and come back to its initial position, then:..

- A. only its distance is zero
 B. only its displacement is zero
 C. neither distance nor displacement is zero
 D. both distance and displacement is zero

93 The SI unit of velocity is

- A. m/s
 B. 1/s
 C. m/s^2
 D. m/s^3

94 At every point of trajectory of projectile which of the following quantities is always zero

- A. horizontal velocity
 B. total velocity
 C. vertical acceleration
 D. horizontal acceleration

95 Which unit is used in the measurement of Displacement?

- A. m
 B. m/s
 C. 1/s
 D. N

96 A motion with uniform negative acceleration can be represented on displacement-time graph by:...

- A. a horizontal line
 B. a curve line with decreasing gradient
 C. a straight line with constant gradient
 D. a curve line with increasing gradient

97 When an object moves in a straight line then:...

- A. its displacement is equal to distance
 B. its displacement is greater than distance
 C. its displacement is less than distance
 D. we cannot measure displacement

98 For a linear relationship between displacement and time we get d-t graph as

- A. straight line passing through origin
 B. straight line parallel to t- axis
 C. quadratic relationship
 D. cubic relationship

99 If the velocity of an object is increasing with time then acceleration is

- A. negative
 B. positive
 C. zero
 D. none of the above

100 Displacement and distance moved by an object in a straight path is

- A. zero
 B. same
 C. different
 D. not enough info

101 Inertia refers to tendency of object to

- A. be at rest

FORCE AND MOTION

B. be at constant motion

C. remain in the same state as previous

D. be at accelerating motion

102 1 light year distance is

A. distance travelled by earth in one year

B. distance travelled by star in one year

C. distance travelled by light in one year

D. distance travelled by light in one galactic year

103 Acceleration of a particle at any moment from a-t graph we calculate is called _____ acceleration

A. average

B. instantaneous

C. periodic

D. linear

104 Projectile motion is not dependent on the _____ of particle

A. initial velocity

B. mass

C. launch angle

D. acceleration

105 A horizontal line in displacement-time graph represents:...

A. uniform accelerated motion

B. motion with constant velocity

C. motion with constant speed

D. body at rest

106 If one body is at motion then if we try to stop it then it will resist by

A. inertia of motion

B. inertia of rest

C. inertia of turning

D. inertia of acceleration

107 If an object moves with constant speed then its acceleration always is

A. zero

B. nonzero

C. infinite

D. none of these

108 Circular motion of a particle while attached to a string centripetal acceleration is provided by

A. Tension in string

B. gravitational force

C. Normal force

D. none of these

109 Velocity is a

A. tensor

B. vector

C. scalar

D. None of these

110 Passengers sitting in a stationary car experience a jerk when the car suddenly starts. This is due to

A. inertia of motion

B. inertia of rest

C. inertia of turning

D. inertia of acceleration

111 Centripetal acceleration always acts _____ the center

A. away

B. towards

C. normally

D. tangentially

112 The net force acting in an inertial frame is

A. positive

B. negative

C. zero

D. none of these

113 Velocity of an object changes from 20 m/s to 50 m/s in 5 sec. What is the acceleration of the object?

A. 6 m/s

B. 6 m/s²

C. 10 m/s

D. 10 m/s²

114 Pseudo forces arises in

A. inertial frames

B. constant moving frames

C. rest frame of reference

D. accelerating frame of reference

115 The acceleration of a moving object can be defined as:...

A. rate of change in speed

B. rate of change in velocity

C. rate of change in distance

D. rate of change in displacement

116 The net force acting in an inertial frame is

A. positive

B. negative

C. zero

D. none of these

117 Velocity of an object changes from 20 m/s to 50 m/s in 5 sec. What is the acceleration of the object?

FORCE AND MOTION

- A. 6 m/s
- B. 6 m/s²**
- C. 10 m/s
- D. 10 m/s²

118 Rockets use thrust forces which produces

- A. constant acceleration
- B. variable acceleration**
- C. constant velocity
- D. linearly varying velocity

119 A straight moving bus takes a sharp right turn. What will happen to the passengers sitting inside the bus?

- A. They will tilt rightwards**
- B. They will tilt leftwards**
- C. They will stay the way they were
- D. They will start jumping

120 If the velocity of particle is varying linearly with time then shape of d-t curve would be

- A. linear**
- B. quadratic
- C. cubic
- D. decreasing linearly

121 When an object moves on a circular path, then...

- A. its displacement is constant
- B. its displacement changes due to change in distance
- C. its displacement changes due to change in direction of motion**
- D. its displacement is always zero

122 When an object moves on a circular path, then...

- A. its displacement is constant
- B. its displacement changes due to change in distance
- C. its displacement changes due to change in direction of motion**
- D. its displacement is always zero

123 If we apply 100 N force on 10 kg box then its acceleration is

- A. 20 m/s²
- B. 5 m/s²
- C. 10 m/s²**
- D. 40 m/s²

124 If we are standing in bus and when conductor's apply a brake then we feel

- A. pseudo force pushes backwards
- B. pseudo force pushes forwards**
- C. real force pushes backwards
- D. real force pushes forwards

125 The magnitude of the displacement is:...

- A. size of object A

B. straight line distance between the initial position and the final position of the body

- C. size of object B
- D. any distance between the initial position and the final position of the body

126 A car travels 30 m toward east, then it takes turn and travels 40 m towards north. It takes 50 seconds. Its average velocity is:...

- A. 7/5 m/s
- B. 1 m/s**
- C. 1/5 m/s
- D. 5 m/s

127 Average velocity of a object after a completing a circle of 5 m radius in 5 seconds

- A. 2π
- B. π
- C. zero**
- D. 10π

128 Acceleration in the Simple pendulum is always _____ to displacement

- A. inversely proportional
- B. directly proportional
- C. acting negative**
- D. independent

129 Rate of change in displacement is known as:...

- A. speed
- B. velocity**
- C. acceleration
- D. momentum

130 Displacement of object with respect a constant moving(v) frame in same direction is

- A. $x-vt$**
- B. $x+vt$
- C. x
- D. $x+vt+at^2$

131 The unit of velocity is:...

- A. m
- B. m s
- C. m / s**
- D. m / s²

WORK AND ENERGY

1 Which of the following is not a conservative force

- A. friction
- B. electric
- C. magnetic
- D. gravitational

2 A constant force of $F = (i - 2j - 3k)$ causes a displacement $d = (2i - 5j + k)$, what will be the net work done if F in N and displacement is in meter

- A. 15 J
- B. 9 J
- C. 8 J
- D. 18 J

3 A 4kg eagle picks up a 75g snake and raises it 2.5 m from the ground to a branch. What is the work done by the eagle on the snake? (Assume $g = 10 \text{ m/s}^2$)

- A. 100 J
- B. 1.875 J
- C. 18.75 J
- D. 187.5 J

4 A bullet of mass 5×10^{-5} has the velocity of 200 m/s, kinetic energy of the bullet is

- A. 100 J
- B. 1000 J
- C. 10 J
- D. none of these

5 A bullet of mass 10 g leaves a rifle at an initial velocity of 1000 m/s and strikes earth at the same level with a velocity of 500 m/s. the work in overcoming the resistance of air will be:

- A. 500J
- B. 5000J
- C. 3750J
- D. 475J

6 A constant force of 20N is applied in horizontal direction and distance travelled in the direction of force is 5m, then work done is

- A. 200 J
- B. 50 J
- C. 20 J
- D. 100 J

7 A man hold a bucket by applying force 10 N, then moves a horizontal distance of 5 m and vertical distance of 10 m, find out the net work done

- A. 100 J
- B. 150 J
- C. 50 J
- D. 200 J

8 An object is displaced from point A (2,3,4) m to point B (1,2,3) m under a constant force $F = (2i + 3j + 4k)$. find the work done by this force in this process

- A. 9 J
- B. 0
- C. -9 J
- D. 20 J

9 1 joule is equal to

- A. 10^4 erg
- B. 10^5 erg
- C. 10^6 erg
- D. 10^7 erg

10 Work done by a conservative force in a complete cycle is

- A. Zero
- B. more than zero
- C. less than zero
- D. none of these

11 When a spring is stretched, work done by stretching force is

- A. positive
- B. negative
- C. zero
- D. none of these

12 An object is displaced from position vector $r_1 = (2i + 3j)m$ to $r_2 = (4j + 6k)m$ under a force $F = (3x^2 i - 2y j) N$. Find the work done by this force

- A. 55 J
- B. 83 J
- C. 0
- D. -83 J

13 When total work done on a particle is positive then

- A. KE remain constant
- B. momentum increases

WORK AND ENERGY

C. KE decreases
 D. all of these

14 A particle of mass 'm' is projected from the ground with an initial speed u_0 at an angle 'a' with the horizontal. At the highest point of its trajectory it makes a completely inelastic collision with another particle of mass which was thrown vertically upward from the ground with the same initial speed u_0 . The angle that the composite system makes with the horizontal immediately after the collision is

- A. 37°
- B. $45^\circ - a$
- C. $45^\circ + a$
- D. 90°

15 Work done in pulling up a block of wood weighing 2 kN for a length of 10 m on a smooth plane inclined at an angle of 15 degree with the horizontal is

- A. 4.36 kJ
- B. 5.17 kJ
- C. 8.91 kJ
- D. 9.82 kJ

16 When brakes are applied to moving vehicle, the work done by the braking system is

- A. positive
- B. negative
- C. zero
- D. none of these

17 A particle of mass 10 kg is moving with velocity $10(x)^{1/2}$, here x is displacement. The work done by net force 18 during the displacement of particle from $x=4$ to $x=9$

- A. 1250 J
- B. 1000 J
- C. 3500 J
- D. 2500 J

19 A steel ball of mass 5 g is thrown downward with velocity 10 m/s from height 19.5m. It penetrates sand by 50 cm. The change in mechanical energy will be: ($g = 10 \text{ m/s}^2$)

- A. 1 J
- B. 1.25 J
- C. 1.5 J
- D. 1.75 J

20 A body moves a distance of 10 m along a straight line under the action of 5 N force. If work done is 25 J, then angle between the force and direction of motion of the body will be:

- A. 75°
- B. 60°
- C. 45°
- D. 30°

21 Effect of work is equal to

- A. Change in total energy
- B. change in kinetic energy
- C. change in power
- D. none of these

22 The body move 10 m along the straight line under the force 5 N, what is the angle between force and displacement

- A. 0 degree
- B. 30 degree
- C. 45 degree
- D. 60 degree

23 A block of mass 60 kg just slides over a horizontal distance of 0.9 m. if the coefficient of friction between their surfaces is 0.15 then work done against friction will be:

- A. 79.4 J
- B. 97.54 J
- C. 105.25 J
- D. 81 J

D. 81 J

24 A variable force $F = 2x$ is applied what will be the work done in moving the particle from $X = 10$ to 0

- A. 100 J
- B. 50 J
- C. -50 J
- D. -100 J

25 Work done on a ceiling fan by gravity is

- A. maximum
- B. zero
- C. minimum
- D. infinity

26 Two bodies of mass m and 4m moving with same kinetic energy, ratio of kinetic energy will be

- A. 4 : 1
- B. 1 : 1

WORK AND ENERGY

C. 1 : 4

D. 1 : 2

27 An object is displaced from point A (0,1,1) m to point B (1,4,3) m under a constant force $F = (i + 2j + 3k)$. find the work done by this force in this process

A. 13 J

B. 15 J

C. 0

D. -13 J

28 A force $F = (0.5x + 10)$ N acts on a particle, calculate the work done by the force in displacing particle from $x=0$ to $x=2$ m

A. 20 J

B. 21 J

C. 22 J

D. 23 J

29 A man standing in a bus and pushing the wall of the bus in direction of motion work done by the man is

A. positive

B. zero

C. negative

D. none of these

30 A stone of 1 kg is thrown upward it reaches a max height of 5 m, work done by the gravity is

A. 50 J

B. 49 J

C. -49 J

D. 55 J

31 A position dependent force $F = 7 - 2x + 3x^2$ N act on a body of mass 2 kg and displaces it from $x=0$ to $x=5$, the work done in joule is

A. 70

B. 270

C. 35

D. 135

32 A horse is pulling a cart of mass 50 kg in the horizontal direction, if the distance travelled is 20 m then what will be the work done by normal force

A. 1000 J

B. -1000 J

C. 0

D. 500 J

33 Work done is said to be negative if force and displacement are

A. parallel

B. perpendicular

C. anti parallel

D. none of these

34 A constant force of 10 N is applied on a body which causes displacement of 12 cm what will be the work done

A. 120 J

B. 12 J

C. 1.2 J

D. 18 J

35 The linear momentum is increased by 10%, percentage change in the kinetic energy will be

A. 0.21

B. 0.11

C. 0.22

D. 0.1

36 A uniform chain of length 2 m is kept on a table such that a length of 60 cm hangs freely from the edge of the table. The total mass of the chain is 4 kg. What is the work done in pulling the entire chain on the table?

A. 7.2 J

B. 3.6 J

C. 120 J

D. 1200 J

38 A disc of radius 2 m and mass 100 kg roll on a horizontal surface, its center of mass has speed of 2 cm/s, how much work is needed to stop it

A. 1 J

B. 3 J

C. 30 J

D. 2 J

39 Moon is revolving around the earth, work done by the earth on the moon is

A. positive

B. zero

C. negative

D. none of these

WORK AND ENERGY

40 The K.E. of a body of mass 2kg and momentum of 2Ns is :

- A. 1J
- B. 2J
- C. 3J
- D. 4J

41 A gardener move a lawn roller through a distance of 50 m. Applied force is 50 N inclined at 60 degree of direction of motion what will be the work done by the gardener

- A. 1250 J
- B. 2500 J
- C. -1250 J
- D. -2500 J

42 Kinetic energy of the body is increased by the 21 %. what is the percentage change in the linear momentum of the body

- A. 0.21
- B. 0.22
- C. 0.11
- D. 0.1

43 Which of the following types of force can do no work on the particle upon which it acts

- A. frictional force
- B. gravitational force
- C. centripetal force
- D. elastic force

44 In case of harmonic oscillator total energy remains

- A. variable
- B. infinity
- C. constant
- D. zero

45 If momentum is increased by 20% then K.E. increase by :

- A. 0.44
- B. 0.55
- C. 0.66
- D. 0.77

46 A force of $F = 20 + 10y$ N is acting in y direction, work done by this force to move the particle from $y = 0$ to $y = 1$ m

- A. 20 J
- B. 15 J
- C. 5 J
- D. 25 J

47 Work is done by the applying force when

- A. applied force is variable
- B. applied force is perpendicular to the motion
- C. applied force generated motion
- D. applied force is constant

48 If mass and speed both are doubled kinetic energy will

- A. increases 4 times
- B. increases 6 times
- C. increases 8 times
- D. increases 10 times

49 A force $F = 7 - 2x + 3x^2$ is applied on 2 kg body, work done to displace the body from $x = 0$ to $x = 5$ m

- A. 70 J
- B. 270 J
- C. 35 J
- D. 135 J

50 Work done by friction force is always

- A. Negative
- B. positive
- C. zero
- D. maybe positive, maybe negative

51 A force of $F = 1 + y$ N is acting in y direction, work done by this force to move the particle from $y = 0$ to $y = 1$ m

- A. 0.5 J
- B. 1 J
- C. 2 J
- D. 1.5 J

52 KE of body is increased by 44 %, what is the percentage increase in the momentum

- A. 10 %
- B. 20 %
- C. 30 %
- D. 44 %

53 Work is a

- A. vector quantity
- B. scalar quantity
- C. sometime scalar some time vector
- D. none of these

54 When a man walks on a surface horizontally with constant velocity, work done by

WORK AND ENERGY

- A. friction is zero
- B. contact force is zero
- C. gravity is zero
- D. all of these**

55 What is kinetic energy of body 5kg and momentum 15 kg.m/sec

- A. 30 J
- B. 55 J
- C. 50 J
- D. 22.5 J**

56 If a horse pulls a cart, work done by horse is

- A. negative
- B. zero
- C. positive**
- D. none of these

57 An object is displaced from point A (2,3,4) m to point B (1,2,3) m under a constant force $F = (2i + 3j + 4k)$. find the work done by this force in this process

- A. 9 J
- B. 0
- C. -9 J**
- D. 20 J

58 In case of harmonic oscillator total energy remains

- A. variable
- B. infinity**
- C. constant**
- D. zero

59 A variable force $F = x$ is applied what will be the work done in moving the particle from $X=0$ to 1

- A. 2 J
- B. 1 J
- C. 0.5 J**
- D. 5 J

60 A 4kg eagle picks up a 75g snake and raises it 2.5 m from the ground to a branch. What is the work done to raise the bird's own centre of mass to the branch? (Assume $g = 10 \text{ m/s}^2$)

- A. 100 J**
- B. 1.875 J

- C. 18.75 J
- D. 187.5 J

61 A particle of mass 10 kg is moving with velocity $10(x)^{1/2}$, here x is displacement. The work done by net force during the displacement of particle from $x=4$ to $x=9$

- A. 1250 J
- B. 1000J
- C. 3500J
- D. 2500 J**

63 Work done by friction

- A. can be zero
- B. can be positive
- C. can be negative
- D. all of these**

64 A body moves a distance of 10 m along a straight line under the action of 5 N force. If work done is 25 J, then angle between the force and direction of motion of the body will be:

- A. 75°
- B. 60°**
- C. 45°
- D. 30°

65 The atmosphere around the earth is held by

- A. clouds
- B. winds
- C. gravity**
- D. none of these

66 A body of mass 10 kg is moved parallel to the ground, through a distance of 2 m. The work done against gravitational force is

- A. zero**
- B. 196 J
- C. -196 J
- D. 48 J

67 ____work on arbitrary system means a transfer of energy to the system

- A. Positive**
- B. negative
- C. Can be positive or negative
- D. None of the above

68 Work done by the centripetal force on a body moving in circle is zero because

WORK AND ENERGY

- A. the body moves parallel to F
- B. the body move opposite to F
- C. the body move right angle to F**
- D. centripetal and centrifugal balance each other

69 When momentum of body increased by 200 %, its kinetic energy increases by

- A. 200 %
- B. 300 %
- C. 400 %
- D. 800 %**

70 Two forces of 5 N and 15 N are working on a body in opposite direction. If body displaced by 5 m in direction of net force, what will be the work done by net force

- A. 50 J**
- B. - 50 j
- C. 25 J
- D. 100 J

71 In a simple pendulum work done by the tension force is

- A. positive
- B. negative
- C. zero**
- D. none of these

72 Which is the unit of energy

- A. joule
- B. erg
- C. unit(Kwh)**
- D. all of these**

73 A block of mass 50 kg slide over a horizontal distance of 1 m, if the coefficient between the surfaces is 0.2 then work done against friction is

- A. 98 J**
- B. 72 J
- C. 56 J
- D. 34 J

74 For a particular displacement how is the work done related to time

- A. depend on time
- B. independent of time**
- C. both of these
- D. none of these

75 Consider a drop of water of mass 1 gm falling from a height of 1 km. It hits the ground with a speed of 50 m/s, take $g = 10 \text{ m/s}^2$. the work done by gravitational force is

- A. 1.25 J
- B. 100 J
- C. 10 J**
- D. -10 J

76 If the increase in the kinetic energy of a body is 22% , then the increase in the momentum will be:

- A. 0.22
- B. 0.44
- C. 0.1**
- D. 1

77 A ball is released from the top of the tower, the ratio of work done by the gravity in first, second and third second of the motion

- A. 1 : 2 : 3
- B. 1 : 4 : 9
- C. 1 : 3 : 5**
- D. 1 : 5 : 3

78 A bullet fired from gun can pierce to a target due to

- A. heat energy
- B. mechanical energy
- C. acceleration
- D. kinetic energy**

79 A 4kg eagle picks up a 75g snake and raises it 2.5 m from the ground to a branch. What is the work done to raise the 80 bird's own centre of mass to the branch? (Assume $g = 10 \text{ m/s}^2$)

- A. 100 J**
- B. 1.875 J
- C. 18.75 J
- D. 187.5 J

81 If the speed of the body is doubled, then

- A. KE doubled
- B. PE doubled
- C. momentum doubled**
- D. acceleration is doubled

82 Two forces of $F_1 = 5 \text{ N}$ and $F_2 = 15 \text{ N}$ are working on a body in opposite direction. If body

WORK AND ENERGY

displaced by 5 m in direction of net force ,what will be the work done by F_1

- A. 25 J
- B. -25 J**
- C. 50 J
- D. 75 J

83 When the direction of the force and displacement are opposite, work done is

- A. **negative**
- B. positive
- C. zero
- D. none of these

84 ____ work on arbitrary system means a transfer of energy to the system

- A. Positive**
- B. negative
- C. Can be positive or negative
- D. None of the above

85 A particle moves from point P(1,2,3) to Q(2,1,4) under the action of a constant force $F(2\mathbf{i} + \mathbf{j} + \mathbf{k})$, work done by force is

- A. 2 J**
- B. 4 J
- C. 16 J
- D. 8 J

86 Work is said to be done when a body move through certain distance by the action of

- A. energy
- B. force**
- C. momentum
- D. power

87 Two masses 1 g and 4 g are moving with equal kinetic energies. The ratio of the magnitudes of their linear momenta is

- A. 4 : 1
- B. 1 : 2**
- C. 0 : 1
- D. 1 : 6

88 What is the SI unit of work

- A. joule**
- B. newton
- C. watt
- D. none of these

89 If a porter is carrying a load and waiting for arrival of train then work done by the porter is

- A. positive
- B. zero**
- C. negative
- D. none of these

90 A man pushes a wall and failed to displace it ,he does

- A. Negative work
- B. positive work but not maximum
- C. No work at all**
- D. maximum work

91 At which angle work done is maximum

- A. 45 degree
- B. 90 degree
- C. 0 degree**
- D. 180 degree

92 A charge of 2 C placed in electric field of 10 N/C what will be the work done in moving charge a distance of 5 m

- A. 100 J**
- B. 50 J
- C. 150 J
- D. 200 J

93 A constant force of 10N is applied in horizontal direction and distance travelled in the direction of force is 2m,then work done is

- A. 50 J
- B. 20 J**
- C. 22 J
- D. 10 j

94 Area of force - displacement curve gives the information about

- A. Power
- B. Impulse
- C. Force
- D. Work**

95 A cubic vessel of height 1 m is full of water, the minimum work done in taking water out

- A. 500 J
- B. 1000 J
- C. 5 J
- D. 10 J**

96 A cubic vessel of height 1 m is full of water, the minimum work done in taking water out

- A. 500 J
- B. 1000 J
- C. 5 J

WORK AND ENERGY

D. 10 J

97 Which of the following vector is perpendicular to the vector $A = 2i + 3j + 4k$

- A. $i + j + k$
- B. $4i + 3j - 2k$
- C. $i - 3j + k$
- D. $i + 2j - 2k$**

98 Work has the dimension as that of

- A. torque**
- B. momentum
- C. power
- D. angular momentum

99 When a force is parallel to the the direction of motion of body, the work done is

- A. Zero
- B. minimum
- C. infinity**
- D. maximum**

100 A spring having spring constant of 10 N/m^2 is stretched to 5 m ,what will be the work done

- A. 250 J
- B. 50 J
- C. -250 J
- D. 125 J**

101 If force is $F = 4i - 2j$ and displacement is $d = 3i + 4j$, the work done will be

- A. 4 J**
- B. 8 J
- C. 2 J
- D. 12 J

102 A field in which work done in a moving a body along the close path is zero called

- A. Electric field
- B. conservative field**
- C. magnetic field
- D. none of these

103 A man move a roller through a distance of 20 m. 10 N of applied force is inclined at 60 degree of direction of motion what will be the work done by the man

- A. 100 J**
- B. 50 J
- C. -100 J
- D. -50 J

104 When momentum of body increased by 200 %, its kinetic energy increases by

- A. 200 %
- B. 300 %
- C. 400 %
- D. 800 %**

105 Which of the following is not a conservative force

- A. friction**
- B. electric
- C. magnetic
- D. gravitational

106 An object is displaced from point A (2,3,4) m to point B (1,2,3) m under a constant force $F = (2i + 3j + 4k)$. find the work done by this force in this process

- A. 9 J
- B. 0
- C. -9 J**
- D. 20 J

107 1 joule is equal to

- A. 10^{-4} erg
- B. 10^{-5} erg
- C. 10^{-6} erg
- D. 10^{-7} erg**

108 An object is displaced from position vector $r_1 = (2i + 3j)m$ to $r_2 = (4j + 6k)m$ under a force $F = (3x^2 i + 2y j) \text{ N}$. Find the work done by this force

- A. 55 J
- B. 83 J**
- C. 0
- D. -83 J

109 When total work done on a particle is positive then

- A. KE remain constant
- B. momentum increases**
- C. KE decreases
- D. all of these

110 When brakes are applied to moving vehicle, the work done by the braking system is

- A. positive
- B. negative**

WORK AND ENERGY

- C. zero
 D. none of these

111 A steel ball of mass 5 g is thrown downward with velocity 10 m/s from height 19.5m. It penetrates sand by 50 cm. The change in mechanical energy will be: ($g = 10 \text{ m/s}^2$)

- A. 1j
B. 1.25J
 C. 1.5J
 D. 1.75J

112 Effect of work is equal to

- A. Change in total energy
B. change in kinetic energy
 C. change in power
 D. none of these

113 A block of mass 60 kg just slides over a horizontal distance of 0.9 m. if the coefficient of friction between their surfaces is 0.15 then work done against friction will be:

- A. 79.4J
 B. 97.54J
 C. 105.25J
D. 81J

114 An object is displaced from point A (0,1,1) m to point B (1,4,3) m under a constant force $F = (i + 2j + 3k)$. find the work done by this force in this process

- A. 13 J**
 B. 15 J
 C. 0
 D. -13 J

115 A man standing in a bus and pushing the wall of the bus in direction of motion work done by the man is

- A. positive
B. zero
 C. negative
 D. none of these

116 A stone of 1 kg is thrown upward it reaches a max height of 5 m, work done by the gravity is

- A. 50 J
 B. 49 J
C. -49 J
 D. 55 J

117 A position dependent force $F = 7 - 2x + 3x^2 \text{ N}$ act on a body of mass 2 kg and displaces it from $x = 0$ to $x = 5$, the work done in joule is

- A. 70
 B. 270
 C. 35
D. 135

118 A disc of radius 2 m and mass 100 kg roll on a horizontal surface, its center of mass has speed of 2 cm/s, how much work is needed to stop it

- A. 1 J
B. 3 J
 C. 30 J
 D. 2 J

119 A gardener move a lawn roller through a distance of 50 m. Applied force is 50 N inclined at 60 degree of direction of motion what will be the work done by the gardener

- A. 1250 J**
 B. 2500 J
 C. -1250 J
 D. -2500 J

120 Which of the following types of force can do no work on the particle upon which it acts

- A. frictional force
 B. gravitational force
C. centripetal force
 D. elastic force

121 A man pulls a bucket of water from a h meter deep well, if mass of rope is m and mass of bucket with water is M, then work one by man is

- A. $(M/2 + m)gh$
 B. $(M + m)gh/2$
 C. $(M + m/2)gh$
D. $(M+m)gh$

122 If momentum is increased by 20% then K.E. increase by :

- A. 0.44**
 B. 0.55
 C. 0.66
 D. 0.77

WORK AND ENERGY

123 KE of body is increased by 44 %, what is the percentage increase in the momentum

- A. 10 %
- B. 20 %**
- C. 30 %
- D. 44 %

124 When a man walks on a surface horizontally with constant velocity, work done by

- A. friction is zero
- B. contact force is zero
- C. gravity is zero
- D. all of these**

125 Work done by friction force is always

- A. Negative
- B. positive
- C. zero
- D. maybe positive, maybe negative**

126 What is kinetic energy of body 5kg and momentum 15 kg.m/sec

- A. 30 J
- B. 55 J
- C. 50 J
- D. 22.5 J**

127 An object is displaced from point A (2,3,4) m to point B (1,2,3) m under a constant force $F = (2i + 3j + 4k)$. find the work done by this force in this process

- A. 9 J
- B. 0
- C. -9 J**
- D. 20 J

128 A variable force $F = x$ is applied what will be the work done in moving the particle from $X = 0$ to 1

- A. 2 J
- B. 1 J
- C. 0.5 J**
- D. 5 J

129 A 4kg eagle picks up a 75g snake and raises it 2.5 m from the ground to a branch. What is

the work done to raise the bird's own centre of mass to the branch? (Assume $g = 10 \text{ m/s}^2$)

- A. 100 J**
- B. 1.875 J
- C. 18.75 J
- D. 187.5 J

130 A particle of mass 'm' is projected from the ground with an initial speed u_0 at an angle 'a' with the horizontal. At the highest point of its trajectory it makes a completely inelastic collision with another particle of mass which was thrown vertically upward from the ground with the same initial speed u_0 . The angle that the composite system makes with the horizontal immediately after the collision is

- A. 37°**
- B. $45^\circ - a$
- C. $45^\circ + a$
- D. 90°

131 Two masses 1 g and 4 g are moving with equal kinetic energies. The ratio of the magnitudes of their linear momenta is

- A. 4 : 1
- B. 1 : 2**
- C. 0 : 1
- D. 1 : 6

132 Two forces of 5 N and 15 N are working on a body in opposite direction. If body displaced by 5 m in direction of net force ,what will be the work done by net force

- A. 50 J**
- B. - 50 j
- C. 25 J
- D. 100 J

133 In a simple pendulum work done by the tension force is

- A. positive
- B. negative
- C. zero**
- D. none of these

134 Which is the unit of energy

- A. joule
- B. erg
- C. unit(Kwh)

WORK AND ENERGY

D. all of these

135 in case of simple pendulum total energy remains

A. variable

B. constant

C. infinity

D. zero

136 Work done by non conservative force is

A. Reversible

B. Non-Reversible

C. can be both

D. none of them

137 A body of mass 2 kg is raised vertically raised by 2m then work will be

A. 38.2 J

B. 392.1 J

C. 39.2 J

D. 40 J



ROTATION AND CIRCULAR MOTION

1 A force which acts on an object moving in a circle and is directed towards the center of the circle is called

- A. Bending Force
- B. Centripetal Force**
- C. centrifugal force
- D. none of these

2 One rpm is equal to _____ 0.10472 rad/sec

- A. 2
- B. 1.5
- C. 2.5
- D. 0.105**

3 The angle through which a body moves is called:

- A. Angular displacement**
- B. Angular velocity
- C. Angular acceleration
- D. None of these

4 Determine the angular velocity if 4.8 revolutions are completed in 4 seconds

- A. 9.6 radians/sec
- B. 7.5 radians/sec**
- C. 8 radians/sec
- D. 0.96 radians/sec

5 The centripetal force direction is positive when object rotates

- A. anti-clockwise**
- B. clockwise
- C. upward
- D. none of these

6 Centripetal force acts

- A. Outwards
- B. Inwards**
- C. Both of them
- D. None of them

7 The angular speed of the wheels of a bicycle is 8π radian/sec there period of rotation is :

- A. .25 sec**
- B. .4 sec
- C. $\pi/4$ sec
- D. 4 sec

8 Centripetal force acts

- A. Outwards
- B. Inwards**
- C. Both of them

D. None of them

9 If a transverse wave travelling in a denser medium is incident on a rarer medium, it is ...

- A. reflected without any change in phase**
- B. reflected with phase change of 90 deg
- C. reflected with phase change of 180 deg
- D. reflected with phase change of 270 deg

10 The angular velocity of a minute hand of a clock is?

- A. $2\pi/60$ rads⁻¹
- B. $\pi/24$ rads⁻¹
- C. $2\pi/3600$ rads⁻¹**
- D. $\pi/3600$ rads⁻¹

11 Angular displacement is a

- A. vector quantity**
- B. scalar quantity
- C. neither scalar nor vector quantity
- D. none of these

12 When a body moves in a circle, the angle between its linear velocity and angular velocity is always?

- A. 180°
- B. 0°
- C. 90°**
- D. 45°

13 A wheel whose radius is 50 cm rotates at an angular velocity of 6 rad/sec. The linear velocity of the rim of the wheel is closest to

- A. 1.5 m/s
- B. 4.5 m/s
- C. 3.0 m/s**
- D. 7.5 m/s

14 The angular acceleration has units

- A. rad/sec
- B. sec/rad
- C. sec²
- D. none of these**

15 For an object moving in a circle, the angle between linear velocity and the position vector is:

- A. 0 degrees
- B. 30 degrees
- C. 90 degrees**
- D. 60 degrees

16 If radial distance is 2 m and linear acceleration is 2 m the angular acceleration becomes



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ROTATION AND CIRCULAR MOTION

- A. 4
B. 14
C. 6
D. 1
- 17 Angle between radius vector and centripetal acceleration is
A. 0°
B. π
C. 2π
D. none of these
- 18 The linear acceleration will be maximum when angle between r and a is
A. 0
B. 90°
C. 60°
D. none of these
- 19 The centripetal acceleration is maximum when object moves with r
A. increasing
B. decreasing
C. constant
D. none of these
- 19 The angular velocity at a particular instant is called:
A. instantaneous angular speed
B. instantaneous angular velocity
C. angular speed
D. none of these
- 20 The angular frequency is related to linear frequency by relation
A. inversely
B. directly
C. equally
D. none of these
- 21 For constant linear acceleration, angular acceleration and radius are
A. equal
B. inversely related
C. directly related
D. no relation
- 22 The angular velocity will become equal to linear velocity when r becomes
A. zero
B. negative
C. unity
D. they can never be equal
- 23 The dimensions of angular velocity are
A. $[LT^{-1}]$
B. $[LT]$
C. $[LT^{-2}]$
D. $[T^{-1}]$
- 24 The relation between linear and angular velocity is:
A. $v = r \times \omega$
B. $v = \omega \times r$
C. $\omega = v \times r$
D. $r = v \times \omega$
- 25 If a wheel of radius r turns through an angle of 30° , then the distance through which any point on its rim moves is?
A. $\pi/3r$
B. $\pi r/6$
C. $\pi/30r$
D. $\pi/180r$
- 26 The angular acceleration becomes infinite when r becomes
A. zero
B. doubled
C. very large
D. none of these
- 27 Determine the linear velocity of a point rotating at an angular velocity of 12π radians per second at a distance of 8 centimeters from the center of the rotating object.
A. 31.6 cm/s
B. 301.6 cm/s
C. 30.6 cm/s
D. 3016 cm/s
- 28 The ratio of angular speed of the minute hand of clock to that of its hour hand is :
A. 3600:1
B. 60:1
C. 24:1
D. 12:1
- 29 The value of angular momentum is maximum when Θ is
A. 60 degrees
B. 45 degrees
C. 0 degree
D. 90 degrees
- 30 A car is moving in a circular track of radius 20m at a constant speed of 20m/sec. Find the centripetal acceleration?
A. 20 m/s^2
B. 40 m/s^2

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ROTATION AND CIRCULAR MOTION

- C. 30 m/s^2
D. 10 m/s^2

31 If $r=1\text{m}$ and $\Theta=1$ degree then what is the value of S

A. 0.01745m

- B. 1m
C. 2m
D. None

32 A car accelerates from 0 to 72 km/h in 5 seconds. If it has wheels of diameter 50 cm . the angular acceleration of its wheels is

A. 1.6 rad/s^2

B. 8 rad/s^2

C. 16 rad/s^2

D. 160 rad/s^2

33 The angular acceleration becomes four times when

A. $\alpha=2, r=2$

B. $\alpha=4, r=4$

C. $\alpha=3, r=0$

D. $r=0, \alpha=0$

34 An angular velocity of 60 revolutions per minute is the same as:

A. $1/2\pi \text{ rad/s}$

B. $120\pi \text{ rad/s}$

C. $30\pi \text{ rad/s}$

D. $2\pi \text{ rad/s}$

35 What is angular velocity?

A. Change in angular rotation / change in time

B. Change in displacement / change in time

C. Change in speed / change in time

D. Change in acceleration / change in time

36 The frequency of a particle performing circular motion changes from 60 rpm to 180 rpm in 20s, then the angular acceleration is

A. $0.1\pi \text{ rad/s}^2$

B. $0.2\pi \text{ rad/s}^2$

C. $0.3\pi \text{ rad/s}^2$

D. $0.4\pi \text{ rad/s}^2$

37 If angular frequency is doubled, centripetal force is

A. twice

B. four times

C. eight times

D. remain same

38 The direction associated with angular displacement is given by

A. Left hand rule

B. Head to tail rule

C. Right hand rule

D. none of these

39 A body moving along the circumference of a circle completes two revolutions. If the radius of the circular path is R, the total angular displacement covered is?

A. π

B. 2π

C. zero

D. 4π

40 A mixer grinder rotates clockwise its angular velocity will be :

A. zero

B. negative

C. uniform but not zero

D. positive

41 The tires on a bicycle have a diameter of 24 inches. If the tires are turning at a rate of 50 revolutions per minute, determine the bicycle's speed in miles per hour (mph).

A. 3.1

B. 6.3

C. 3.9

D. 3.6

42 An object is travelling in a circle at constant speed. Its angular velocity is:

A. changing

B. the same

C. increasing

D. decreasing

43 An object moving in a circle is tied to a string. What happens when the string is cut?

A. it continues moving in a circle

B. it flies off along a tangent

C. it falls straight down

D. none of these

44 An electric fan rotating at 3 rev s^{-1} is switched off. It comes to rest in 18.0 s. Assuming deceleration to be uniform. How many revolutions did it turn before coming to rest?

A. 30 rev

B. 27 rev

C. 40 rev

D. 10 rev

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45 When a body moves in a circle of radius r with angular speed ω , its centripetal acceleration is

- A. ωr
- B. $\omega^2 r$
- C. ωr^2
- D. ωr

46 The linear acceleration of a body moving in a circular path is:

- A. negative
- B. positive
- C. constant
- D. zero

47 The angular speed of a particle, moving in a circle of radius 20 cm, increases from 2 rad/s to 40 rad/s in 9s the ratio of its centripetal acceleration to tangential acceleration at the end of 19 s is,

- A. 400:1
- B. 14:20
- C. 800:1
- D. 7:40

48 The angular displacement is assigned positive sign when the rotation is

- A. Clockwise
- B. Anti-clockwise
- C. perpendicular
- D. parallel

49 The direction of which angular quantity cannot be measured by right hand

- A. angular velocity
- B. angular acceleration
- C. torque
- D. all of these

50 Find the radius of the circular path if a car is moving with a velocity of 25 m/s and has a centripetal acceleration of 10 m/s^2 ?

- A. 72.3 m/s
- B. 30 m/s
- C. 62.5 m/s
- D. 52.5 m/s

51 A body is moving in a circle at constant speed. Which statement is true?

- A. The resultant force acts towards the centre of the circle
- B. There is no resultant force
- C. The resultant force acts away from the centre of the circle
- D. none of these

52 For clockwise rotations direction of angular velocity is

- A. positive
- B. negative
- C. zero
- D. infinite

53 What is the formula for centripetal acceleration?

- A. $a = v/t$
- B. $a = v/r$
- C. $a = v^2/r$
- D. none of these

54 If radius of object is doubled the centripetal force acting on same object becomes

- A. double
- B. half
- C. eight times
- D. remain same

55 A body is travelling in a circle of radius r at a speed v . Its centripetal acceleration will be:

- A. $a = r^2 / v$
- B. $a = r / v$
- C. $a = v^2 / r$
- D. $a = v / r$

56 Which quantity is a scalar quantity

- A. angular displacement
- B. angular velocity
- C. angular acceleration
- D. none of these

57 The minute hand of a large clock is 3.0 m long. What is its mean angular speed

- A. $1.4 \times 10^{-4} \text{ rad s}^{-1}$
- B. $1.0 \times 10^{-3} \text{ rad s}^{-1}$
- C. $5.2 \times 10^{-3} \text{ rad s}^{-1}$
- D. $1.7 \times 10^{-3} \text{ rad s}^{-1}$

58 What is the measure in degrees of the angle $A = 7\pi/6$?

- A. 150
- B. 210
- C. 100
- D. 120

59 The angular displacement is taken to be positive when the rotation is

- A. linear
- B. non-linear
- C. clockwise



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D. anti-clockwise

60 What is the measure in radians of the angle $A = 330^\circ$?

- A. $11\pi/3$
- B. $7\pi/4$
- C. $7\pi/6$
- D. $11\pi/6$

61 The direction of linear velocity of a body moving in a circle is?

- A. Along radius away from center
- B. Along radius towards center
- C. changing with motion
- D. Along the tangent

62 The angular speed for the daily rotation of Earth in rad s^{-1} is?

- A. 2π
- B. π
- C. 4π
- D. $7.3 \times 10^{-5} \text{ rad s}^{-1}$

63 What is 1 radian in degrees approximately

- A. 57.3 degrees
- B. 360 degrees
- C. π degrees
- D. π^2 degrees

64 A belt passes over a wheel of radius 25 cm. if a point on the belt has a speed of 5 m/s, the belt is moving with an angular velocity of

- A. 3.2 rad s
- B. 0.32 rad s
- C. 20 rad/s
- D. 0.032 rad s

65 What force provides the centripetal force to planets moving around the sun?

- A. coulomb force
- B. gravitational force
- C. magnetic force
- D. none of these

66 The velocity along tangent is

- A. escape velocity
- B. angular velocity
- C. linear velocity
- D. all of these

67 A point on a wheel has a constant angular velocity of 3 rad/s . The angle turned through in 15 seconds is:

- A. 45 rad
- B. 10π rad

- C. 90π rad
- D. 5 rad

68 If a car moves with a uniform speed of 2ms^{-1} in a circle of radius 0.4, its angular speed is?

- A. 4 rads^{-1}
- B. 5 rads^{-1}
- C. 1.6 rads^{-1}
- D. 2.8 rads^{-1}

69 Find angular acceleration when $\Delta\omega$ is 250 rpm and Δt is 5.00 s.

- A. 5.24 rad/sec^2
- B. 6 rad/sec^2
- C. 10 rad/sec^2
- D. none of these

70 The SI unit of angular displacement is

- A. Metre
- B. Kilometre
- C. Radian
- D. None of these

71 For anti-clockwise rotations direction of angular velocity is

- A. positive
- B. negative
- C. zero
- D. infinite

72 One radian means

- A. arc length of unit radius is half
- B. arc length of unit radius is unity
- C. one degree
- D. all of these

73 A car is moving in a circular track of diameter 100m at a constant speed of 40m/sec. Find the centripetal acceleration?

- A. 42 m/s^2
- B. 52 m/s^2
- C. 32 m/s^2
- D. 30 m/s^2

74 A string 2m long is used to whirl a 200g stone in horizontal circle at a speed of 2m/s. Find tension in string.

- A. 0.4 N
- B. 1.4 N
- C. 2.4 N
- D. 3.4 N

75 A particle is performing uniform circular motion has constant:

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A. velocity

B. acceleration

C. position

D. momentum

76 For angular acceleration clockwise rotations means torque is

A. positive

B. negative

C. zero

D. infinite

77 7 Radian is equal to ____ degree approximately

A. 300

B. 400

C. 500

D. none of these

78 Angular velocity is also called as

A. Instantaneous velocity

B. Rotational velocity

C. Tangential velocity

D. Linear velocity

79 One radian is equal to:

A. 57.3 degrees

B. 47.3 degrees

C. 67.5 degrees

D. 59.5 degrees

80 If a rotating body is moving anti-clockwise, the direction of angular velocity is

A. towards the centre

B. along the linear velocity

C. away from the centre

D. perpendicular to both radius and linear velocity

81 An object moving in a circle is tied to a string. What happens when the string is cut?

A. it continues moving in a circle

B. it flies off along a tangent

C. it falls straight down

D. none of these

82 A body performing circular motion with a constant speed has a constant :

A. momentum

B. angular velocity

C. acceleration

D. radius vector

83 When brakes of a car are applied, angular velocity of a flywheel reduces from 900 cycles/min to 720 cycle/min in 6sec. Angular retardation is

A. $\pi \text{ rads}^{-2}$

B. $9\pi \text{ rad/s}^2$

C. $8\pi \text{ rad/s}^2$

D. none of these

84 The shaft of a motor rotates at a constant angular speed of 360rev/min. Angle turned through in 1 sec in radian is?

A. π

B. 3π

C. 6π

D. 12π

85 The relation between linear and angular acceleration is:

A. $a = \alpha \times r$

B. $\alpha = a \times r$

C. $v = a \times r$

D. $r = \alpha \times v$

86 If angular velocity increases the _____ also increases

A. time period

B. frequency

C. vibration

D. none of these

87 The rate of change of angular velocity is called:

A. angular displacement

B. angular acceleration

C. angular velocity

D. acceleration

88 If a car moves with a uniform speed of 2ms^{-1} in a circle of radius 0.4, its angular speed is?

A. 4 rads^{-1}

B. 5 rads^{-1}

C. 1.6 rads^{-1}

D. 2.8 rads^{-1}

89 Which of the following is not a unit of angular displacement :

A. degree

B. revolution

C. meters

D. radian

90 The angular acceleration is maximum when

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A. $r = \text{maximum}$

B. $r = 0$

C. $r = 1$

D. none of these

91 An arc of length equal to the circumference of a circle subtends an angle?

A. π radian

B. 2π radian

C. $\pi/2$ radian

D. 4π radian

92 A car of mass 2000 kg moving in a circular path of radius 10 m at a constant speed of 30m/sec. Find the centripetal force required for this purpose.

A. 1800N

B. 18N

C. 180 kN

D. 18 kN

93 The angular displacement of an object after one complete revolution is:

A. 0 radian

B. π radian

C. 2π radian

D. $(1/3)\pi$ radian

94 The minute hand of a large clock is 3.0 m long. What is its mean angular speed

A. $1.4 \times 10^{-4} \text{ rad s}^{-1}$

B. $1.0 \times 10^{-3} \text{ rad s}^{-1}$

C. $5.2 \times 10^{-3} \text{ rad s}^{-1}$

D. $1.7 \times 10^{-3} \text{ rad s}^{-1}$

95 A car is moving in a circular track of diameter 100m at a constant speed of 40m/sec. Find the centripetal acceleration?

A. 42 m/s^2

B. 52 m/s^2

C. 32 m/s^2

D. 30 m/s^2

96 The centripetal force is zero when centrifugal force is

A. equal

B. zero

C. maximum

D. none of these

97 For an object moving in a circle, the angle between linear velocity and the position vector is:

A. 0 degrees

B. 30 degrees

C. 90 degrees

D. 60 degrees

98 The direction of linear velocity of a body moving in a circle is?

A. Along radius away from center

B. Along radius towards center

C. changing with motion

D. Along the tangent

99 The dimensions of angular velocity are

A. $[LT^{-1}]$

B. $[LT]$

C. $[LT^{-2}]$

D. $[T^{-1}]$

100 The angular displacement of an object after one complete revolution is:

A. 0 radian

B. π radian

C. 2π radian

D. $(1/3)\pi$ radian

101 The linear acceleration will be maximum when angle between r and a is

A. 0

B. 90

C. 60

D. none of these

102 The angular displacement of an object after one complete revolution is:

A. 0 radian

B. π radian

C. 2π radian

D. $(1/3)\pi$ radian

103 If an object is undergoing an orbital motion around another object it is called

A. Revolution

B. Rotation

C. Both of them

D. None of them

104 A force which acts on an object moving in a circle and is directed towards the center of the circle is called

A. Bending Force

B. Centripetal Force

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- C. centrifugal force
D. none of these

105 One rpm is equal to _____ 0.10472 rad/sec

- A. 2
B. 1.5
C. 2.5
D. 0.105

106 Determine the angular velocity if 4.8 revolutions are completed in 4 seconds

- A. 9.6 radians/sec
B. 7.5 radians/sec
C. 8 radians/sec
D. 0.96 radians/sec

107 The centripetal force direction is positive when object rotates

- A. anti-clockwise
B. clockwise
C. upward
D. none of these

108 Centripetal force acts

- A. Outwards
B. Inwards
C. Both of them
D. None of them

109 The angular speed of the wheels of a bicycle is 8π radian/sec there period of rotation is

- A. .25 sec
B. .4 sec
C. $\pi/4$ sec
D. 4 sec

110 The angular velocity of a minute hand of a clock is?

- A. $2\pi/60 \text{ rads}^{-1}$
B. $\pi/24 \text{ rads}^{-1}$
C. $2\pi/3600 \text{ rads}^{-1}$
D. $\pi/3600 \text{ rads}^{-1}$

111 Angular displacement is a:

- A. vector quantity
B. scalar quantity
C. neither scalar nor vector quantity
D. none of these

112 Angle between radius vector and centripetal acceleration is

- A. 0°

B. π

C. 2π

D. none of these

113 The centripetal acceleration is maximum when object moves with r

- A. increasing
B. decreasing
C. constant
D. none of these

114 The angular velocity at a particular instant is called:

- A. instantaneous angular speed
B. instantaneous angular velocity
C. angular speed
D. none of these

115 The angular frequency is related to linear frequency by relation

- A. inversely
B. directly
C. equally
D. none of these

116 The number of revolutions in 3π radians is

- A. 2
B. $3/2$
C. 6
D. $1/6$

117 An arc of length equal to the circumference of a circle subtends an angle?

- A. π radian
B. 2π radian
C. $\pi/2$ radian
D. 4π radian

118 the value of quantity G in the law of gravitation

- A. depend on mass of Earth only
B. depends on radius of Earth only
C. depends on both
D. it independent of mass and radius of Earth

119 Angular displacement is zero when

- A. angle = 0
B. $v=0$
C. $r=0$
D. both b and c

120 What is 30 degrees in radians?

- A. $\pi/3$
B. $\pi/6$

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- C. $\pi/2$
D. $\pi/4$

121 For constant linear acceleration, angular acceleration and radius are

- A. equal
B. inversely related
C. directly related
D. no relation

122 The relation between linear and angular velocity is:

- A. $\mathbf{v = r \times \omega}$
B. $\mathbf{v = \omega \times r}$
C. $\mathbf{\omega = v \times r}$
D. $\mathbf{r = v \times \omega}$

123 The angular acceleration becomes infinite when r becomes

- A. zero
B. doubled
C. very large
D. none of these

124 Determine the linear velocity of a point rotating at an angular velocity of 12π radians per second at a distance of 8 centimeters from the center of the rotating object.

- A. 31.6 cm/s
B. **301.6 cm/s**
C. 30.6 cm/s
D. 3016 cm/s

125 The value of angular momentum is maximum when Θ is

- A. 60 degrees
B. 45 degrees
C. 0 degree
D. **90 degrees**

126 A car is moving in a circular track of radius 20m at a constant speed of 20m/sec. Find the centripetal acceleration?

- A. **20 m/s²**
B. 40 m/s²
C. 30 m/s²
D. 10 m/s²

127 If $r=1\text{m}$ and $\Theta=1$ degree then what is the value of S

- A. **0.01745m**
B. 1m
C. 2m
D. None

128 A car accelerates from 0 to 72 km/h in 5 seconds. If it has wheels of diameter 50 cm. the angular acceleration of its wheels is

- A. 1.6 rad/s²
B. 8 rad/s²
C. **16 rad/s²**
D. 160 rad/s²

129 The angular acceleration becomes four times when

- A. **$\alpha=2, r=2$**
B. $\alpha=4, r=4$
C. $\alpha=3, r=0$
D. $r=0, \alpha=0$

130 What is angular velocity?

- A. **Change in angular rotation / change in time**
B. Change in displacement / change in time
C. Change in speed / change in time
D. Change in acceleration / change in time

131 If angular frequency is doubled, centripetal force is

- A. twice
B. **four times**
C. eight times
D. remain same

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- A. Left hand rule
B. Head to tail rule
C. **Right hand rule**
D. none of these

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- A. π
B. 2π
C. zero
D. **4π**

134 The tires on a bicycle have a diameter of 24 inches. If the tires are turning at a rate of 50 revolutions per minute, determine the bicycle's speed in miles per hour (mph).

- A. 3.1
B. 6.3
C. 3.9
D. **3.6**

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WAVES

1 The oscillating object overshoots the rest position due to:

- A. restoring force
- B. inertia
- C. gravitational potential energy
- D. elastic potential energy

Which of the following is the experimental evidence in support of the Huygen's wave theory?

- A. reflection
- B. refraction
- C. Young's double slit experiment
- D. polarization

2 The distance between two consecutive crests of a travelling wave is 10 cm. If the speed of the wave 50 m/s, then its frequency would be:....

- A. 40 Hz
- B. 1/5 Hz
- C. 5 Hz
- D. 500 Hz

3 In a periodic wave, the distance between a crest and the next consecutive trough is 15 cm. What is the wavelength of the wave?

- A. 10 cm
- B. 5 cm
- C. 7.5 cm
- D. 30 cm

4 A monochromatic light is incident on two slits and interference pattern is produced on screen at the distance L. Now one slit is covered, no light coming from it. What is the change in pattern on the screen?

- A. the width of central maximum is decreased
- B. the width of outer maximum is decreased
- C. the intensity of central maximum will increase
- D. less number of fringes will be observed

5 A longitudinal standing wave, in second harmonic mode, is established in a tube that is open at both ends. The length of the tube is 0.80 m. What is the wavelength of the waves that make up the standing wave?

- A. 0.20 m
- B. 0.40 m
- C. 0.80 m
- D. 1.60 m

6 The speed v of the waves in the string depends upon the tension F of the string and m , the mass per unit length of the string. It is given by

- A. $v^2 = F/m$
- B. $v = F/m$
- C. $v \cdot m = F$

D. $v = F \cdot m$

7 When path difference between two waves are odd integral multiple of half the wavelength, the resultant effect is called

- A. destructive interference
- B. constructive interference
- C. beats
- D. diffraction

8 Whenever a transverse wave travelling in a denser medium, is reflected from the boundary of the rarer medium...

- A. the direction of its displacement remains same
- B. the direction of its displacement is reversed
- C. the displacement disappears
- D. the displacement becomes double

9 If displacements due to two individual waves are y_1 and y_2 . Then the resultant displacement, y , of the particle of the medium is:

- A. $y = y_1 + y_2$
- B. $y = y_1 / y_2$
- C. $y = y_1 - y_2$
- D. $y = y_1 + y_2$

10 A pipe is open at both ends. A stationary wave is formed in the air of the pipe. Which statement is true:

- A. there is always a central antinode
- B. there is always a central node
- C. the sum of number of nodes and the number of antinodes is always an even number
- D. the sum of number of nodes and the number of antinodes is always an odd number

11 A stationary wave is formed in a pipe which is open at one end. If length of pipe is 5 cm, then what is the maximum possible wavelength of the wave?

- A. 5 cm
- B. 10 cm
- C. 15 cm
- D. 20 cm

12 In a stationary wave, the distance between adjacent antinodes is equal to:

- A. λ
- B. 2λ
- C. $\lambda/2$
- D. $\lambda/4$

13 The object oscillates due to:

- A. a restoring force
- B. its weight
- C. centripetal force
- D. force of friction



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WAVES

14 Speed of the sound, v , in a medium of elastic modulus E and density d , is given by:

- A. $v = E/d$
- B. $v = E*d$
- C. $v^2 = E*d$
- D. $v^2 = E/d$

15 A point source broadcasts sound into a uniform medium. If the distance from the source is tripled how does the intensity change?

- A. It becomes one-ninth as large
- B. It becomes one-third as large
- C. It becomes three times larger
- D. It becomes nine times larger

16 20 waves pass through a point in a medium, in 5 seconds. What is the time required to pass one wave?

- A. 1/4 sec
- B. 4 sec
- C. 1/2 sec
- D. 2 sec

17 A pendulum undergoes simple harmonic motion. The phase difference between the displacement and the acceleration of the particle is:

- A. 0
- B. $\pi\pi/2$
- C. $\pi\pi$
- D. $3\pi\pi/2$

18 What is the wavelength of the wave if the phase angle between two points of the medium is $3\pi/4$ and they are separated through a distance of 3 cm?

- A. 8 cm
- B. 9 cm
- C. 1 cm
- D. 12 cm

19 The phenomenon of polarization of light reveals that light waves are:....

- A. transverse waves
- B. longitudinal waves
- C. mechanical waves
- D. none of these

20 Michelson measured the length of standard metre in terms of the wavelength of:

- A. green cadmium light
- B. violet cadmium light
- C. red cadmium light
- D. blue cadmium light

21 In a double slit experiment the second order maximum occurs at $\theta = 0.25^\circ$. The wavelength is 650 nm. Determine the slit separation

- A. 0.30 mm
- B. 0.30 cm
- C. 0.30 nm
- D. 0.30 m

22 The speed of sound, v , is not affected by a variation in the pressure of the gas, because:

- A. speed, v , does not depend on pressure
- B. speed, v , does not depend on density
- C. density is proportional to pressure
- D. none of the above

23 When a standing wave is set up in a pipe which is open from one end, which of the following statements is true?

- A. sum of the number of antinodes and the number of nodes is always even
- B. wavelength = length string / number of nodes
- C. The shape of the string at any instant shows a symmetry about the midpoint of the string
- D. frequency = number of nodes * fundamental frequency

24 Two tuning forks produces N beats. If one of these tuning forks has the frequency f , then the frequency of the other would be:

- A. $N - f$
- B. N / f
- C. $N * f$
- D. $N + f$

25 Under the action of the restoring force:

- A. the speed of the body always increases
- B. the body moves at constant speed
- C. the body always slows down
- D. the body accelerates

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WAVES

26 In a periodic wave, the distance between two consecutive crests is known as:

A. wave length

- B. amplitude
- C. displacement
- D. none of these

27 Whenever a transverse wave, travelling in a rarer medium, encounters a denser medium.

- A. An incident crest on reflection disappears
- B. An incident trough on reflection remains trough
- C. An incident crest on reflection becomes a trough**
- D. An incident crest on reflection remains crest

28 Michelson showed that the standard metre was equivalent to:

- A. 1,553 wavelengths of red light
- B. 1,553 wavelengths of blue light
- C. 1,553,163.5 wavelengths of red light**
- D. 1,553,163.5 wavelengths of blue light

29 Let L be the light source. Its intensity at the distance of $3x$ from L is I. What is its intensity of light at the distance of $2x$ from the source of light?

A. $9I/4$

- B. $3I/2$
- C. $4I/9$
- D. $2I/3$

30 In a stationary wave, the distance between adjacent nodes is equal to:

- A. λ
- B. 2λ
- C. $\lambda/2$**
- D. $\lambda/4$

31 The property of bending of light around obstacles and spreading of light waves into the geometrical shadow of an obstacle is called:

- A. diffraction**
- B. reflection
- C. interference
- D. refraction

32 What is echo of sound?

A. When sound reflects back

- B. When sound gets absorbed
- C. When sound penetrates into objects
- D. All of them

33 The density of oxygen is 16 times the density of hydrogen. If the speed of sound in oxygen is v , then what is the speed of sound in hydrogen?

- A. $v/4$
- B. $4v$**
- C. $v/2$
- D. $2v$

34 When the antinodes are all at their extreme displacements,

- A. the energy stored is wholly kinetic
- B. the energy stored is wholly potential**
- C. the energy stored is kinetic and potential
- D. the energy stored is wholly chemical

35 The phase angle between two points in a medium is $3\pi/4$. If the distance between these points is 20 cm, then wavelength of the wave is?

- A. $8/15$ m**
- B. $15/8$ m
- C. $8/15$ cm
- D. $15/8$ cm

36 A wavefront travels from air to the medium Q. It makes an angle 45 deg with boundary in air and makes an angle 30 deg with boundary in medium Q. What is the refractive index of the medium Q?

- A. $\sin(30) / \sin(45)$
- B. $\sin(45) / \sin(30)$**
- C. $\sin(60) / \sin(45)$
- D. $\sin(45) / \sin(60)$

37 A standing-wave pattern is formed when the length of the string is:

- A. an odd multiple of quarter wavelength
- B. an integral multiple of quarter wavelength
- C. an integral multiple of wavelength
- D. an integral multiple of half wavelength**

38 Two tuning forks produces 6 beats per second. Which of the following are possible frequencies of these tuning forks.

WAVES

- A. 12 Hz and 24 Hz
B. 8 Hz and 14 Hz
 C. 10 Hz and 20 Hz
 D. 66 Hz and 11 Hz

39 Which of the following phenomenon proves that light waves are transverse waves?

- A. polarization**
 B. refraction
 C. interference
 D. diffraction

40 SI Unit of wavelength?

- A. m**
 B. m^3
 C. m/s
 D. m/s^2

41 A stationary wave is formed in a pipe which is open at one end. If two complete loops are formed and the wavelength of the wave is 10 cm, what is the length of the pipe?

- A. 10 cm
 B. 15 cm
C. 12.5 cm
 D. 7.5 cm

42 Wavelength of a travelling wave is 20 cm. What is the phase angle between the two points separated through a distance of 25 cm?

- A. 2π
B. 2.5π
 C. 3π
 D. D
 E. 1π

43 Radar system is an application of:...

- A. Doppler's effect**
 B. mechanical effect
 C. electric effect
 D. magnetic effect

44 Which of the following frequency of sound wave is audible

- A. 5 Hz

- B. 5000 Hz**
 C. 2500 kHz
 D. 50 kHz

45 In a stationary wave, the distance between two consecutive crests is:

- A. one wavelength
 B. $3/4$ wavelength
C. $1/2$ wavelength
 D. $3/2$ wavelength

46 The shortest distance between two points on the wave that have a phase difference of $(\pi/3)$ is 5 cm. What is its wavelength?

- A. 10 cm
 B. 20 cm
C. 30 cm
 D. 40 cm

47 Wavelength of a sound wave in air is 10 cm, what is the frequency of the sound wave?

- A. 33 Hz
 B. 330 Hz
C. 3300 Hz
 D. 33000 Hz

48 What is an optically active medium?

- A. which absorbs light
 B. which absorbs polarized light
C. which rotates plane of polarization
 D. which refract polarized light

49 If a transverse wave travelling in a rarer medium is incident on a denser medium, it is reflected such that...

- A. it undergoes a phase change of 90 deg
B. it undergoes a phase change of 180 deg
 C. it undergoes a phase change of 270 deg
 D. it undergoes a phase change of 0 deg

WAVES

50 Light of wavelength 450 nm is incident on a diffraction grating on which 5000 lines/cm have been ruled. Determine the angle corresponding to third order.

- A. 13
- B. 26
- C. 42.5**
- D. 39.5

51 A first harmonic stationary sound wave is produced in the air of the cylinder, which is half filled with water. More water is added to the cylinder, now first harmonic stationary wave is produced with a different frequency. What is the change in frequency and the nature of displacement in air at the water surface?

- A. nature of displacement = antinode change in frequency = decrease
- B. nature of displacement = antinode change in frequency = increase
- C. nature of displacement = node change in frequency = increase**
- D. nature of displacement = node change in frequency = decrease

52 A sound wave has a wavelength λ . What is the minimum possible distance between two points with phase difference 90 deg?

- A. $\lambda/2$
- B. $3\lambda/2$
- C. $5\lambda/2$
- D. $5\lambda/4$**

53 One vibration can be defined as:

- A. motion of the body from one extreme position to the other extreme position
- B. motion of the body from one extreme position to the same extreme position**
- C. motion of the body from one extreme position to the mean position
- D. motion of the body from mean position and back to the mean position

54 Two travelling waves of the same frequency, same amplitude and travelling in opposite direction results in:

- A. beats
- B. standing waves**
- C. diffraction
- D. none of these

55 Two travelling waves of the same frequency, same amplitude and travelling in opposite direction results in:

- A. beats
- B. standing waves**
- C. diffraction
- D. none of these

56 Time period of the wave is $1/4$ sec. How long does it take to pass 20 complete waves from a point?

- A. 5 sec**
- B. 80 sec
- C. $1/80$ sec
- D. $1/5$ sec

57 Superposition of two waves having same frequency, same amplitude and travelling in the same direction, is called:

- A. interference**
- B. diffraction
- C. beats
- D. stationary waves

58 A stationary wave is formed in a pipe which is open at both ends. If two complete loops are formed and the wavelength of the wave is 10 cm, what is the length of the pipe?

- A. 15 cm**
- B. 10 cm
- C. 5 cm
- D. 20 cm

59 A stationary wave is formed in a pipe which is open at both ends. If length of pipe is 10 cm, then what is the maximum possible wavelength of the wave.

- A. 20 cm
- B. 5 cm
- C. 10 cm
- D. 30 cm**

60 Oscillatory or vibratory motion can be defined as:

WAVES

- A. upward motion from mean position
 B. right hand motion of the pendulum
C. to and fro motion about the mean position
 D. random movement of gas particles

61 In a stationary wave, the distance between a node and an adjacent antinodes is equal to:

- A. λ
 B. 2λ
 C. $\lambda/2$
D. $\lambda/4$

62 The distance between the consecutive wavefronts is equal to:

- A. one wavelength**
 B. two wavelengths
 C. radius
 D. diameter

63 Superposition of two waves having same frequency, same amplitude and travelling in the opposite direction, is called:

- A. interference
 B. diffraction
 C. beats
D. stationary waves

64 The phase angle between two points in a medium is $4\pi/5$. What is the separation between these two points if the wavelength of the wave is 5m.

- A. $5/4$ m
 B. 4π m
C. 2 m
 D. 10 m

65 In a periodic wave, the distance between second and fifth crests is 15 cm, what is the wavelength of the wave?

- A. 45 cm
B. 5 cm
 C. $1/5$ cm
 D. $1/3$ cm

66 If a pipe is closed at one end and open at the other, the closed end is a:

- A. antinode
B. node
 C. rarefaction
 D. crest

67 The relation between speed frequency and wavelength of a wave is:

- A. speed = frequency * wavelength**
 B. speed * frequency = wavelength
 C. speed = frequency / wavelength
 D. speed = frequency + wavelength

68 In single slit diffraction, when wavelength λ increases:

- A. width of central maxima increases**
 B. width of central maxima does not change
 C. central maxima becomes brighter
 D. width of central maxima decreases

69 If f_1 and f_2 are frequencies of two tuning forks, such that $f_1 < f_2$, then number of beats produced in one second are:

- A. $f_2 - f_1$**
 B. $f_2 * f_1$
 C. $f_1 - f_2$
 D. $f_2 + f_1$

70 An ambulance siren emits a sound of frequency 1800 Hz. The speed of sound in air is 330 m/s. The ambulance moves towards a stationary observer at a constant speed of 50 m/s. What is the frequency heard by the observer?

- A. $(1800 * 290) / 330$
 B. $(1800 * 330) / 370$
C. $(1800 * 330) / 280$
 D. $(1800 * 330) / 380$

71 A stationary wave is formed in a pipe which is open at one end. If length of pipe is L, then what is the maximum possible wavelength of the wave.?

- A. L
 B. $2L$
 C. $3L$
D. $4L$

72 The phase angle between two points is 3π . The distance between these points is 15 cm. What is the wavelength of the wave?

WAVES

- A. 30 cm
- B. 45 cm
- C. 5 cm
- D. 10 cm**

73 A star moving away from earth shows:...

- A. green shift
- B. red shift**
- C. blue shift
- D. none of these

74 Which of the following statements about wave motion is true:

- A. waves transport energy and matter
- B. waves transport energy without transporting matter**
- C. waves transport matter but not energy
- D. waves on a rope, radio waves, infra red

75 In a stationary waves, if the string is made to vibrate in n loops, the frequency of stationary waves set up on the string will be:

- A. $f_n = n * f_1$**
- B. $f_n = n + f_1$
- C. $f_n = f_1 / n$
- D. $n * f_n = f_1$

76 A sound wave travels from a region of hot air into a region of cold air. How does frequency and wavelength of sound change?

- A. frequency decreases wavelength decreases
- B. frequency increases wavelength decreases
- C. frequency does not change wavelength decreases**
- D. frequency does not change wavelength does not change

77 Michelson's interferometer works on the principle of:

- A. interference of light**
- B. refraction of light
- C. reflection of light
- D. diffraction of light

78 The phase angle between two points in a medium is $4\pi/5$. What is the separation between these two points if the wavelength of the wave is 5m.

- A. $5/4$ m
- B. 4π m
- C. 2 m**
- D. 10 m

79 A tuning fork A produces 4 beats with another tuning fork B. if the frequency of tuning fork B is 320 Hz, then the frequency of tuning fork A is:

- A. $320 * 4$
- B. $320 / 4$
- C. $320 + 4$**
- D. 320

80 As the wavelength of light used increases. the distance between bright fringes in the interference pattern:...

- A. increases**
- B. decreases
- C. remains same
- D. none of these

81 An object is moving in a circle. It completes 6 revolutions in every 3 seconds. What is its frequency?

- A. $0.5 \pi \pi$ Hz
- B. $2 \pi \pi$ Hz
- C. 0.5 Hz
- D. 2 Hz**

82 In Young's double slit experiment, fringe spacing increases if:

- A. red light is used as compared to blue light**
- B. x-ray is used as compared to blue light
- C. violet light is used as compared to blue light
- D. ultraviolet light is used as compared to blue light

83 The distance between two consecutive nodes in a stationary wave is equal to:

- A. one wavelength
- B. 2.5 wavelength
- C. 3 wavelength
- D. half wavelength**

84 The speed of waves depends upon the:

- A. tension of the string
- B. B. tension and mass per unit length of the string**
- C. C. diameter of the string
- D. D. mass per unit length of the string

WAVES

85 The phase angle between two points is 3π . The distance between these points is 15 cm. What is the wavelength of the wave?

- A. 30 cm
- B. 45 cm
- C. 5 cm
- D. 10 cm**

86 The shortest distance between two points on a travelling wave that have a phase difference of $(\pi/3)$ is 5 cm. If the wave has frequency 500 Hz, what is the speed of the wave?

- A. 300 m/s
- B. 150 m/s**
- C. 300 cm/s
- D. 150 cm/s

87 The oscillating object overshoots the rest position due to:

- A. restoring force
- B. inertia**
- C. gravitational potential energy
- D. elastic potential energy

88 Critical angle is the angle of incidence in the denser medium for which the angle of refraction in the rarer medium is equal to:...

- A. 0 deg
- B. angle of incidence
- C. twice the angle of incidence
- D. 90 deg**

89 In mass-spring system, which of the following does not depend on the initial displacement of the spring?

- A. maximum kinetic energy of the mass
- B. average speed of the mass
- C. total energy of the mass
- D. angular frequency of the oscillation**

90 A stationary wave is set up in a pipe of length L , which is open from one end. There are three nodes. How many antinodes are there in the stationary wave?

- A. 2
- B. 3**
- C. 4
- D. 6

91 Beats can be used for:

- A. counting the heart beat
- B. tuning a string instrument**
- C. measuring frequency of pendulum
- D. none of above

92 The frequency of a string on a musical instrument can be changed either by:

- A. varying the diameter or by changing the length
- B. varying the tension or by changing the thickness
- C. varying the tension or by changing the length**
- D. varying the thickness or by changing the length

93 A pendulum undergoes simple harmonic motion. The phase difference between the displacement and the acceleration of the particle is:

- A. 0
- B. $\pi/2$
- C. π**
- D. $3\pi/2$

94 In a stationary wave, the distance between a node and an adjacent antinodes is equal to:

- A. λ
- B. 2λ
- C. $\lambda/2$
- D. $\lambda/4$**

95 The waves which propagate by the oscillation of material particles are called:

- A. matter waves
- B. mechanical waves**
- C. electromagnetic waves
- D. microwaves

96 A stationary source of sound produce wave of wavelength L and speed v . Now, the source moves away from the observer. What is the wavelength and speed of the sound as measured by the observer?

- A. wavelength decreases speed does not change
- B. wavelength increases speed does not change**
- C. wavelength increases speed increases

WAVES

D. wavelength increases speed decreases

97 In simple harmonic motion, which two quantities are always in opposite direction?

- A. kinetic energy and potential energy
- B. kinetic energy and velocity
- C. velocity and acceleration

D. acceleration and displacement

98 In step down transformer _____ is decreased in secondary coils

- A. electric field
- B. magnetic field
- C. number of turns**
- D. none of these

99 In a stationary wave, the distance between adjacent antinodes is equal to:

- A. λ
- B. 2λ
- C. $\lambda/2$**
- D. $\lambda/4$

100 The points which are in phase are separated from one another through a distance of :

- A. 1 wavelength**
- B. 1.5 wavelength
- C. 0.5 wavelength
- D. 2.5 wavelength

101 The stationary waves can be set up on the string only with the frequencies of harmonic series determined by:

- A. the tension, length and mass per unit length of the string**
- B. the tension and mass per unit length of the string only
- C. the length and mass per unit length of the string only
- D. the tension and length of the string only

102 Let L be the light source. Its intensity at the distance of $3x$ from L is I. What is its intensity of light at the distance of $2x$ from the source of light?

A. $9/4$

- B. $3/2$
- C. $4/9$
- D. $2/3$

103 The shortest distance between two points on a travelling wave that have a phase difference of $(\pi/3)$ is 5 cm. If the wave has frequency 500 Hz, what is the speed of the wave?

- A. 300 m/s**
- B. 150 m/s
- C. 300 cm/s
- D. 150 cm/s

104 The stationary waves can be set up on the string only with the frequencies of harmonic series determined by:

- A. the tension, length and mass per unit length of the string**
- B. the tension and mass per unit length of the string only
- C. the length and mass per unit length of the string only
- D. the tension and length of the string only

105 The points which are in phase are separated from one another through a distance of :

- A. 1 wavelength**
- B. 1.5 wavelength
- C. 0.5 wavelength
- D. 2.5 wavelength

106 In a periodic wave, the distance between two consecutive crests is known as:

- A. wave length**
- B. amplitude
- C. displacement
- D. none of these

107 The phenomenon of polarization of light reveals that light waves are:....

- A. transverse waves**
- B. longitudinal waves
- C. mechanical waves



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WAVES

D.none of these

108 The speed of sound in Rubber, butyl is 1830 m/s. If its density is 1.35 g/cm^3 then its elastic modulus would be:

A. $4.5 \times 10^6 \text{ Pa}$

B. $45 \times 10^6 \text{ Pa}$

C. $4.5 \times 10^8 \text{ Pa}$

D. $5 \times 10^6 \text{ Pa}$

109 The phase angle between two points in a medium is $4\pi/5$. What is the separation between these two points if the wavelength of the wave is 5m.

A. $5/4 \text{ m}$

B. $4\pi \text{ m}$

C. 2 m

D. 10 m

110 A longitudinal standing wave, in second harmonic mode, is established in a tube that is open at both ends. The length of the tube is 0.80 m. What is the wavelength of the waves that make up the standing wave?

A. 0.20 m

B. 0.40 m

C. 0.80 m

D. 1.60 m

111 The speed of sound in air is approximately:

A. 1500 m/s

B. 5000 m/s

C. 330 m/s

D. 50 m/s

112 What is the unit of frequency?

A. 1/Hertz

B. $1/\text{second}^2$

C. Second

113 Ten complete waves passes through a point in 2 seconds. If the wavelength is 20 cm, what is the speed of the wave?

A. 1 m/s

B. 10 cm/s

C. 2 m/s

D. 40 cm/s

114 The waves which propagate by the oscillation of material particles are called:

A.matter waves

B.mechanical waves

C.electromagnetic waves

D.microwaves

115 A longitudinal standing wave, in second harmonic mode, is established in a tube that is open at both ends. The length of the tube is 0.80 m. What is the wavelength of the waves that make up the standing wave?

A.0.20 m

B.0.40 m

C.0.80 m

D.1.60 m

116 A wave is produced by

A. Disturbance

B. Heating

C. Freezing

D. Clapping

118 Diffraction is prominent when the wavelength of light is:

A. five time small as compared with the size of the obstacle

B. large as compared with the mass of the obstacle

C. large as compared with the size of the obstacle

D. one half as compared with the size of the obstacle

119 A wave is produced by

A. Disturbance

B. Heating

C. Freezing

D. Clapping

120 Wave speed per frequency is equivalent to

A. beats

B. Time period

C. wavelength

D. None of them

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WAVES

121 A stationary wave is formed in a pipe which is open at both ends. If two complete loops are formed and the wavelength of the wave is 10 cm, what is the length of the pipe?

- A. 15 cm
- B. 10 cm
- C. 5 cm
- D. 20 cm

122 The distance between two consecutive crests of a travelling wave is 10 cm. If the speed of the wave 50 cm/s, then its frequency would be:....

- A. 40 Hz
- B. 1/5 Hz
- C. 5 Hz
- D. 500 Hz

124 The number of vibrations executed in one second is called:

- A. Period
- B. Frequency
- C. amplitude
- D. wavelength

125 What is the phase difference between the center of compression and the center of rarefaction in longitudinal wave.

- A. 0 deg
- B. 45 deg
- C. 90 deg
- D. 180 deg

126 In a standing waves, the distance between two consecutive nodes is:

- A. equal to one wavelength
- B. equal to two wavelength
- C. equal to half of wavelength
- D. equal to quarter of wavelength

127 The distance between two consecutive crests of a travelling wave is 10 cm. If the speed of the wave 50 cm/s, then its frequency would be:....

- A. 40 Hz
- B. 1/5 Hz
- C. 5 Hz
- D. 500 Hz

128 The negative sign in $F = -k.x$, indicates that:

- A. F is directed opposite to x
- B. F is directed along x
- C. F is always equal to x
- D. none of these

129 Light of wavelength 450 nm is incident on a diffraction grating on which 5000 lines/cm have been ruled. How many orders of spectra can be observed on either side of the direct beam?

- A. 1
- B. 2
- C. 3
- D. 4

130 A transverse wave on a string has an amplitude

A. A tiny spot on the string is colored red. As 1.5 cycle of the wave passes by, what is the total distance traveled by the red spot?

- A. A
- B. 2A
- C. 4A
- D. 6A

131 Whenever a transverse wave travelling in a denser medium, is reflected from the boundary of the rarer medium...

- A. An incident crest on reflection disappears
- B. An incident trough on reflection becomes double
- C. An incident crest on reflection becomes a trough
- D. An incident crest on reflection remains crest

132 A travelling transverse wave has amplitude a and wavelength λ . What is the minimum distance between a crest and a trough in the direction of propagation of wave.

- A. 2a
- B. a/2

WAVES

C. 2λ

D. $\lambda/2$

133 A stationary wave is formed in a pipe which is open at one end. If length of pipe is L , then what is the maximum possible wavelength of the wave.?

A. L

B. $2L$

C. $3L$

D. $4L$

134 A stationary wave is formed in a pipe which is open at both ends. If length of pipe is 10 cm , then what is the maximum possible wavelength of the wave.

A. 20 cm

B. 5 cm

C. 10 cm

D. 30 cm

135 In a periodic wave, the distance between two consecutive crests is known as:

A. wave length

B. amplitude

C. displacement

D. none of these

136 end, only odd harmonics are generated, which are given by the equation

A. $f_n = (n \cdot v) / (4 \cdot l)$ where $n = 1, 3, 5, \dots$

B. $f_n = (n \cdot v) / (4 \cdot l)$ where $n = 1, 3, 5, \dots$

C. $f_n = (n \cdot v) / (4 \cdot l)$ where $n = 1, 2, 3, 4, 5, \dots$

D. $f_n = (n \cdot v) / (4 \cdot l)$ where $n = 1, 2, 3, 4, 5, \dots$

137 A Stationary wave is set up in a pipe of length L , which is open from both ends. There are three nodes. How many antinodes are there in the stationary wave?

A. 2

B. 3

C. 4

D. 6

138 A wave have the speed 0.50 m/s . If its wavelength is 1.5 m . What is the period of the wave?

A. 0.33 m

B. 3 m

C. 1.5 m

D. 6 m

139 Wavelength of a travelling wave is 20 cm .

What is the phase angle between the two points separated through a distance of 25 cm ?

A. 2π

B. 2.5π

C. 3π

D. 1π

140 The direction of the restoring force is always towards:

A. right hand

B. up ward

C. rest or mean position

D. extreme position

141 A star moving away from earth shows:...

A. green shift

B. red shift

C. blue shift

D. none of these

142 When path difference between two waves are integral multiple of wavelength, the resultant effect is called:

A. destructive interference

B. constructive interference

C. beats

D. diffraction

143 When a monochromatic light travels from glass into air, then...

A. its frequency and wavelength both stays same

B. its frequency stays same but wavelength increases

C. its frequency increases but wavelength stays same

D. its frequency decreases and wavelength increases

WAVES

144 The frequency of a wave is 60 Hz. How long does it take to pass 20 complete waves from a point?

- A. 1200 sec
- B. 12 sec
- C. 3 sec
- D. 1/3 sec**

145 A stationary wave is set up in a pipe of length L. If the pipe is open at one end and closed at other, what is fifth harmonic frequency -----
 ----- ? first harmonic frequency

- A. 4
- B. 6
- C. 1 / 5
- D. 5**

146 The two points of a medium are separated through a distance of 10 cm. What is the phase angle between these two points if the wavelength of the wave is 0.1m.

- A. $\pi\pi$
- B. $2\pi\pi$**
- C. $3\pi\pi$
- D. $3\pi\pi/4$

147 The waves which propagate by the oscillation of material particles are called:

- A. matter waves
- B. mechanical waves**
- C. electromagnetic waves
- D. microwaves

148 The oscillating object overshoots the rest position due to:

- A. restoring force
- B. inertia**
- C. gravitational potential energy
- D. elastic potential energy

149 Michelson's interferometer is an instrument that can be used to measure:

- A. speed

B. frequency

C. distance

D. amplitude

150 A monochromatic light is incident on two slits and interference pattern is produced on screen at the distance L. Now one slit is covered, no light coming from it. What is the change in pattern on the screen?

- A. the width of central maximum is decreased
- B. the width of outer maximum is decreased
- C. the intensity of central maximum will increase
- D. less number of fringes will be observed**

151 A stationary wave is setup on a string which is fixed at both ends. The frequency of the wave is 400 Hz. If the speed of wave is 480 m/s, then what is the length of the string?

- A. 1.2 m
- B. 0.84 m
- C. 0.60 m**
- D. 0.42 m

152 The waves which propagate by the oscillation of material particles are called:

- A. matter waves
- B. mechanical waves**
- C. electromagnetic waves
- D. microwaves

153 As the wavelength of light used increases. the distance between bright fringes in the interference pattern:....

- A. increases**
- B. decreases
- C. remains same
- D. none of these

154 A wave passes through a medium, each particle of the medium performs 100 complete vibrations in 5 seconds. What is the frequency of the wave:

- A. 2 Hz
- B. 20 Hz**
- C. 4 Hz

WAVES

D. 40 Hz

155 A line normal to the wavefront, showing the direction of propagation of light is called:

- A. tangent
- B. radius
- C. wavelength
- D. ray of light**

156 The phase angle between two points is 3π . The distance between these points is 15 cm. What is the wavelength of the wave?

- A. 30 cm
- B. 45 cm
- C. 5 cm
- D. 10 cm**

157 A stationary wave is setup on a string of length 10 cm. Four loops are formed. what is the distance between two consecutive crests?

- A. 4.5 cm
- B. 5 cm
- C. 2.5 cm**
- D. 1.25 cm

158 The direction of the restoring force is always towards:

- A. right hand
- B. up ward
- C. rest or mean position**
- D. extreme position

159 A stationary source of sound produce wave of wavelength λ and speed v . Now, the source moves away from the observer. What is the wavelength and speed of the sound as measured by the observer?

- A. wavelength decreases speed does not change
- B. wavelength increases speed does not change**
- C. wavelength increases speed increases
- D. wavelength increases speed decreases

160 In mass-spring system, which of the following does not depend on the initial displacement of the spring?

- A. maximum kinetic energy of the mass
- B. average speed of the mass
- C. total energy of the mass
- D. angular frequency of the oscillation**

161 An oil film on water surface shows colors due to:....

- A. diffraction
- B. interference**
- C. dispersion
- D. polarization

162 A stationary wave is formed in a pipe which is open at both ends. If length of pipe is L , then what is the maximum possible wavelength of the wave.

- A. $2L$**
- B. $\frac{1}{2}L$
- C. L
- D. $3L$

163 In a Young's double-slit experiment, fringes are very close to each other. How can we increase the distance between fringes?

- A. by increasing the distance between light source and slits
- B. by increasing the distance from slits to the screen**
- C. by increasing the distance between slits
- D. by increasing the frequency of light

164 Beats can be used to find:

- A. speed
- B. frequency**
- C. amplitude
- D. wavelength

165 When a standing wave is set up on a string fixed at both ends, which of the following statements is true?

- A. sum of the number of antinodes and the number of nodes is always even
- B. wavelength = length string / number of nodes
- C. The shape of the string at any instant shows a symmetry about the midpoint of the string**
- D. frequency = number of nodes * fundamental frequency

WAVES

166 In a stationary wave, the distance between a node and consecutive antinode is:

A. a quarter of wavelength

B. $3/4$ of wavelength

C. one wavelength

D. half of wavelength

167 Ten complete waves passes through a point in 2 seconds. If the wavelength is 20 cm, what is the speed of the wave?

A. 1 m/s

B. 10 cm/s

C. 2 m/s

D. 40 cm/s

168 glass block is immersed in a tank which is filled with a liquid of higher refractive index. Light is incident from the liquid on one side of glass block at an angle greater than critical angle. Which of the following statements are true?

A. light is partially transmitted into the glass block bending towards the normal and partially reflected

B. light is partially transmitted into the glass block bending away from the normal and partially reflected

C. light is completely transmitted into the glass and did not reflected in to the liquid

D. light is completely reflected back into the liquid

D. light is completely reflected back into the liquid

169 The maximum value of displacement from the mean position is called:

A. height

B. amplitude

C. frequency

D. distance

170 The speed of sound in air is approximately:

A. 1500 m/s

B. 5000 m/s

C. 330 m/s

D. 50 m/s

171 An object is undergoing simple harmonic motion. It's time period is T and total energy is E . The amplitude of vibration is reduced to half. What is the new time period and total energy of the system?

A. time period = $T/2$ total energy = $E/4$

B. time period = T total energy = $E/4$

C. time period = $T/2$ total energy = $E/2$

D. time period = T total energy = $E/2$

172 A tuning fork A produces 4 beats with another tuning fork B. if the frequency of tuning fork B is 320 Hz, then the frequency of tuning fork A is:

A. 320×4

B. $320 / 4$

C. $320 + 4$

D. 320

173 A steel wire hangs vertically from a fixed point, supporting a weight of 80 N at its lower end. The diameter of the wire is 0.50 mm and its length from the fixed point to the weight is 1.5 m. If density of steel wire = $7.8 \times 10^3 \text{ kg/m}^3$, then what is the fundamental frequency emitted from the wire.

A. 76 Hz

B. 176 Hz

C. 50 Hz

D. 150 Hz

174 In a travelling wave, five complete waves passes through a point in 10 seconds. Frequency of the wave is:....

A. 0.5 Hz

B. 5 Hz

C. 50 Hz

D. 15 Hz

175 Which unit is used in the measurement of Displacement?

A. m

B. m/s

C. $1/s$

D. N

WAVES

176 Two pulses move in opposite directions on a string and are identical in shape except that one has positive displacements of the elements of the string and the other has negative displacements. At the moment the two pulses completely overlap on the string, what happens?

- A. the energy associated with the pulses has disappeared
- B. the string does not move afterwards
- C. the string forms a straight line for a moment**
- D. pulses vanished and will not appear again

177 A surface around a point source of light, on which all the points have the same phase of vibration is known as:

- A. equipotential
- B. surface of sphere
- C. wavefront**
- D. ellipsoid

178 If a transverse wave travelling in a denser medium is incident on a rarer medium, it is ...

- A. reflected without any change in phase**
- B. reflected with phase change of 90 deg
- C. reflected with phase change of 180 deg
- D. reflected with phase change of 270 deg

179 Superposition of two waves having slightly different frequency, same amplitude and travelling in the same direction, is called:

- A. interference
- B. diffraction
- C. beats**
- D. stationary waves

180 A pipe is filled with a gas and open at one end. If the length of the pipe is 0.6 m and the speed of sound in the gas is 300 m/s. Then frequencies of the first two harmonics are:

- A. 125 Hz and 250 Hz
- B. 250 Hz and 750 Hz
- C. 250 Hz and 500 Hz
- D. 125 Hz and 375 Hz**

181 The distance between two consecutive crests of a travelling wave is 10 cm. If the speed of the wave 50 cm/s, then its frequency would be:....

- A. 40 Hz
- B. 1/5 Hz
- C. 5 Hz**
- D. 500 Hz

182 Coherent sources are...

- A. monochromatic sources
- B. sources which produce waves of equal amplitude
- C. monochromatic sources which produce waves of constant phase difference**
- D. sources which produce wave of same frequency

183 Which of the following statement is correct about infrared radiation and X-rays?

- A. Radio waves has frequency larger than X-rays but less than infrared waves
- B. infrared radiation travels faster than X-rays in vacuum
- C. infrared radiation has lower frequency than X-rays**
- D. infrared waves can not be diffracted like X-rays

184 A simple pendulum has mass M, length L and time period T. What is the period of oscillation of the pendulum with mass 4M and length 0.36L?

- A. 0.6T**
- B. T
- C. 2T
- D. 3T

185 A sound wave has a wavelength of 0.20 m. What is the phase difference between two points along the wave which are 0.65 m apart?

- A. 0 deg
- B. 45 deg
- C. 90 deg**
- D. 180 deg

186 A stationary wave is setup on a string of length 10 cm. Four loops are formed. what is the distance between two consecutive crests?

- A. 4.5 cm

WAVES

- B. 5 cm
C. 2.5 cm
 D. 1.25 cm

187 Which group consists of only electromagnetic waves:

- A. microwaves, radio waves, infra red**
 B. microwaves, radio waves, sound
 C. microwaves, water waves, infra red
 D. n/a

approximately:

- A. 1500 m/s
B. 5000 m/s
 C. 330 m/s
 D. 50 m/s

188 Laplace expression for the speed of the sound in a gas is:

- A. $v = P/\rho$
 B. $v = P^*\rho$
 C. $v^2 = P^*\rho$
D. $v = \sqrt{\gamma P/\rho}$

189 A transverse wave on a string has an amplitude

- A. A tiny spot on the string is colored red. As one cycle of the wave passes by, what is the total distance traveled by the red spot?
 A. A
 B. 2A
 C. A/2
D. 4A

190 A stationary wave is formed in a pipe which is open at both ends. If length of pipe is L, then what is the maximum possible wavelength of the wave.

- A. 2 L**
 B. 1/2 L
 C. L
 D. 3 L

191 In a double slit experiment, a monochromatic light was used. the wavelength of light was 500 nm. The distance between slits is 1.0 mm. What is the

separation between fringes if they are observed at a distance of 3.0 m?

- A. 15 mm
 B. 15 cm
C. 1.5 mm
 D. 1.5 cm

192 The direction of the restoring force is always towards:

- A. right hand
 B. up ward
C. rest or mean position
 D. extreme position

193 A park has an outdoor organ. When the air temperature increases, the fundamental frequency of one of the organ pipes:....

- A. is impossible to determine
 B. stays the same
 C. decreases
D. increases

194 When a light ray travels from the medium of low refractive index to a medium of high refractive index. Its....

- A. speed decreases, frequency decreases, wavelength unchanged
 B. speed decreases, frequency unchanged, wavelength unchanged
 C. speed unchanged, frequency increases, wavelength decreases
D. speed decreases, frequency unchanged, wavelength decreases

195 In Michelson's interferometer, displacement L of mirror and wavelength λ of light are related as:

- A. $L = 2 \lambda$
 B. $L = m / \lambda$
 C. $L = m \lambda$
D. $L = m \lambda/2$

196 A stationary wave is setup on a string which is fixed at both ends. The frequency of the wave is 400 Hz. If the speed of wave is 480 m/s, then what is the length of the string?

WAVES

- A. 1.2 m
- B. 0.84 m
- C. 0.60 m**
- D. 0.42 m

197 The waves which propagate by the oscillation of material particles are called:

- A. matter waves
- B. mechanical waves**
- C. electromagnetic waves
- D. microwaves

198 The negative sign in $F = -k.x$, indicates that:

- A. F is directed opposite to x**
- B. F is directed along x
- C. F is always equal to x
- D. none of these

199 When a wave comes across the boundary of two media, a part of it is reflected back. Which statement is true about reflected wave:

- A. the reflected wave has larger wavelength and larger frequency.
- B. the reflected wave has same wavelength and larger frequency.
- C. the reflected wave has larger wavelength and same frequency.
- D. the reflected wave has same wavelength and same frequency.**

200 If the wavelength of a wave is 20 cm and its time period is T. What is the distance travelled by a crest on the wave in $1.25T$?

- A. 30 cm
- B. 25 cm**
- C. 15 cm
- D. 40 cm

201 A longitudinal standing wave, in second harmonic mode, is established in a tube open at only one end. The frequency of the standing wave is 660 Hz, and the speed of sound in air is 343 m/s. What is the length of the tube?

- A. twice as fast

- B. half as fast
- C. four times as fast
- D. the same**

202 Frequency of a travelling wave is 2000 Hz. Its speed is 300m/s. What is its wavelength?

- A. $20/3$ m
- B. 20×3 m
- C. $3/20$ m**
- D. $2/3$ m

203 Whenever a transverse wave, travelling in a rarer medium, encounters a denser medium. It...

- A. bounces back such that the direction of its displacement remains same
- B. bounces back such that the direction of its displacement is reversed**

C. Travels into second medium and the direction of its displacement is reversed

D. Travels into second medium and the direction of its displacement remains same

204 In SONAR we use:...

- A. water waves
- B. sound waves**
- C. microwaves
- D. ultraviolet rays

205 A monochromatic light is incident on a single slit, and a diffraction pattern forms on the screen. If θ is the angle between central maximum and first minimum, then which of the following change will increase θ ?

- A. increase the width of slit
- B. decrease the width of slit**
- C. increase the distance between screen and slit
- D. decrease the distance between screen and slit

206 The number of vibrations executed in one second is called:

- A. Period
- B. Frequency**
- C. amplitude
- D. wavelength

WAVES

207 The oscillating object overshoots the rest position due to:

- A. restoring force
- B. inertia
- C. gravitational potential energy
- D. elastic potential energy

208 Which of the following is the experimental evidence in support of the Huygen's wave theory?

- A. reflection
- B. refraction
- C. Young's double slit experiment
- D. polarization

209 In a periodic wave, the distance between a crest and the next consecutive trough is 15 cm. What is the wavelength of the wave?

- A. 10 cm
- B. 5 cm
- C. 7.5 cm
- D. 30 cm

210 A monochromatic light is incident on two slits and interference pattern is produced on screen at the distance L. Now one slit is covered, no light coming from it. What is the change in pattern on the screen?

- A. the width of central maximum is decreased
- B. the width of outer maximum is decreased
- C. the intensity of central maximum will increase
- D. less number of fringes will be observed

211 The number of vibrations executed in one second is called:

- A. Period
- B. Frequency
- C. amplitude
- D. wavelength

212 The oscillating object overshoots the rest position due to:

- A. restoring force
- B. inertia
- C. gravitational potential energy
- D. elastic potential energy

213 Which of the following is the experimental evidence in support of the Huygen's wave theory?

- A. reflection
- B. refraction
- C. Young's double slit experiment
- D. polarization

214 The distance between two consecutive crests of a travelling wave is 10 cm. If the speed of the wave 50 m/s, then its frequency would be:....

- A. 40 Hz

B. 1/5 Hz

C. 5 Hz

D. 500 Hz

215 When path difference between two waves are odd integral multiple of half the wavelength, the resultant effect is called

- A. destructive interference
- B. constructive interference
- C. beats
- D. diffraction

216 The speed v of the waves in the string depends upon the tension F of the string and m , the mass per unit length of the string. It is given by

- A. $v^2 = F/m$
- B. $v = F/m$
- C. $v \cdot m = F$
- D. $v = F \cdot m$

217 Whenever a transverse wave travelling in a denser medium, is reflected from the boundary of the rarer medium...

- A. the direction of its displacement remains same
- B. the direction of its displacement is reversed
- C. the displacement disappears
- D. the displacement becomes double

218 If displacements due to two individual waves are y_1 and y_2 . Then the resultant displacement, y , of the particle of the medium is:

- A. $y = y_1 \cdot y_2$
- B. $y = y_1 / y_2$
- C. $y = y_1 - y_2$
- D. $y = y_1 + y_2$

219 A pipe is open at both ends. A stationary wave is formed in the air of the pipe. Which statement is true:

- A. there is always a central antinode
- B. there is always a central node
- C. the sum of number of nodes and the number of antinodes is always an even number
- D. the sum of number of nodes and the number of antinodes is always an odd number

220 A stationary wave is formed in a pipe which is open at one end. If length of pipe is 5 cm, then what is the maximum possible wavelength of the wave.?

- A. 5 cm
- B. 10 cm
- C. 15 cm



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THERMODYNAMICS

1 Which of the following is not an assumption of the kinetic model of an ideal gas?

- A. The size of the molecules is much smaller than the separation between molecules
- B. Molecules suffer negligible momentum change during wall collisions.**
- C. Molecules do not exert force on each other except during a collision.
- D. The gas molecules are in random motion and may change their direction of motion after every collision

2 A fixed mass of an ideal gas is contained in a cylinder at constant temperature. Now the pressure of the gas is decreased. What happened to the molecules of gas?

- A. their mean square speed decreases
- B. number of collision between molecules and walls of container decreased**
- C. the force of attraction between them increase
- D. their size decreases

3 Which of this is constant in isochoric process?

- A. total heat
- B. work done**
- C. Entropy
- D. Internal energy

4 A gas expands from V_1 to V_2 at pressure P . Work done is

- A. $P/(V_2 - V_1)$
- B. $(P_2 - P_1)V$
- C. $P(V_1 V_2 / (V_2 - V_1))$
- D. $P(V_2 - V_1)$**

5 The pendulum of a certain pendulum clock is made of brass. When the temperature increases, what happens to the period of the clock?

- A. It increases**
- B. It decreases
- C. It remains the same
- D. It decreases with the square of temperature

6 Which of the following cases (if any) requires the greatest amount of heat? In each case the material is the same.

- A. 1.5 kg of the material is to be heated by 7.0°C
- B. 3.0 kg of the material is to be heated by 3.5°C
- C. 0.50 kg of the material is to be heated by 21°C
- D. The amount of heat required is the same in each of the three previous cases**

7 Which of the following is a thermodynamic coordinate

- A. P
- B. T
- C. V
- D. R**

8 According to First law of thermodynamics,

- A. $dQ = dW - dU$
- B. $dQ = dU$
- C. $dQ = dU + dW$**
- D. $dQ = dW$

9 Which of the following about C_p and C_v is correct?

- A. $C_p + C_v = R$
- B. $C_p = R - C_v$
- C. $C_p + R = C_v$
- D. $C_p = R + C_v$**

10 Under what conditions of temperature and pressure does a real gas approximate to an ideal gas?

- A. pressure = low temperature = low
- B. pressure = low temperature = high**
- C. pressure = high temperature = low
- D. pressure = high temperature = high

11 On a TS diagram which of the events have larger slope?

- A. isobaric process
- B. isochoric process
- C. isothermal process**
- D. None of them

12 A reversible engine works between two temperatures whose difference is 100°C . If it absorbs 746 J of heat from the source and rejects 546 J to the sink, calculate the temperature of the source and the sink.

- A. 100°C , 20°C

THERMODYNAMICS

B. 100°C , 0°C

C. 80°C , 0°C

D. 80°C , 20°C

13 How much energy is required to raise the temperature of 5.00 kg of lead from 20.0°C to its melting point of 327°C ? The specific heat of lead is $128 \text{ J/kg}^{\circ}\text{C}$.

A. $1.96 \times 10^5 \text{ J}$

B. $4.04 \times 10^5 \text{ J}$

C. $1.07 \times 10^5 \text{ J}$

D. $8.15 \times 10^4 \text{ J}$

14 An ideal gas of N molecules are enclosed in a container at a constant pressure p . The graph between volume of gas and its absolute temperature is a straight line. What is the gradient of the graph?

A. $N R$ ----- p

B. $N R P$

C. $N k$ ----- p

D. $N k p$

15 What does the constant N represent in the equation of state for an ideal gas $PV = NkT$?

A. number of molecules of gas

B. number of moles of the gas

C. number of nucleons

D. number of protons

16 Work done in a isobaric process is given by

A. PdT

B. PdV

C. VdP

D. P^2dV

17 Which of the following is an example of isothermal process?

A. The rapid escape of air from a burst tyre

B. The rapid expansion and compression of air through which a sound wave is passing

C. Cloud formation in the atmosphere

D. slow compression or expansion of gas

18 Area of PV diagram gives

A. Internal energy

B. work done

C. Entropy

D. Heat

19 The energy input to an engine is 60 J, and the work it performs is 15 J. What fraction of the energy input is expelled to the cold reservoir?

A. 0.25

B. 75%

C. 1

D. impossible to determine

20 What is the internal energy change in system that has absorbed 800 J of heat and work done is 500 J?

A. 200 J

B. 550 J

C. 600 J

D. 300 J

21 In Boyle's law, which quantity is constant

A. P

B. T

C. V

D. R

22 Which of the terms is related with thermodynamics

A. System

B. Surrounding

C. Boundary

D. All of these

23 When no heat enters or leaves the system, it is called:...

A. isothermal

B. adiabatic

C. isovolumetric

D. isobaric

24 First law of thermodynamics state

A. system can do work

B. system has temperature

C. system has pressure

D. Heat is form of energy

THERMODYNAMICS

25 Cyclic path is one in which initial state is equal to

- A. 2(final state)
- B. final state**
- C. 3(final state)
- D. Not enough information

26 A common material for cushioning objects in packages is made by trapping bubbles of air between sheets of plastic. Is this material more effective at keeping the contents of the package from moving around inside the package on

- A. a hot day**
- B. a cold day
- C. either hot or cold days
- D. There is not enough information to say

27 Initial pressure and volume are P and V respectively. First it expanded isothermally to $4V$ then compressed adiabatically to Volume V , the final pressure is

- A. $2P$
- B. $1P$**
- C. $3P$
- D. $4P$

28 The sum of all forms of molecular energies (kinetic and potential) of a substance is termed as its

- A. absolute temperature
- B. internal energy**
- C. potential energy
- D. kinetic energy

29 An ideal gas is compressed to half of its initial volume. Which of these process would result in maximum work done?

- A. Adiabatic**
- B. Isobaric
- C. Isochoric
- D. Isothermic

30 Initial mass of water, at its boiling point, is 0.8 kg . 4 kW of heater is used to boil it completely. Assuming the specific latent heat of vaporization of water is 2 MJ/kg , what is the time taken to vaporize all the water?

- A. 400 s**
- B. 4000 s
- C. 250 s
- D. 2500 s

31 If the system goes from two different paths to same final state then Q_1 and W_1 and Q_2 and W_2 are heat absorbed and work done then

- A. $Q_1 = Q_2$
- B. $W_1 = W_2$
- C. $Q_1 + W_1 = Q_2 + W_2$
- D. $Q_1 - W_1 = Q_2 - W_2$**

32 A liquid has specific heat capacity c . The rate of change in temperature of liquid is R . The rate at which heat is transferred from the liquid is P . What is the mass of the liquid?

- A. P / cR**
- B. PR / c
- C. Pc / R
- D. cPR

33 300 W heater is used to boil 500 g of water at 100°C . How long should the heater be switched on? Specific latent heat of vaporization of water is 2230 J/g .

- A. 62 mins**
- B. 62 sec
- C. 1.5 hour
- D. 0.5 hour

34 A car of mass M is moving with speed v . The brake of mass m and specific heat capacity c , is used to stop the car. If half of the kinetic energy of the car is absorbed by the brake, then what is the increase in temperature of the brake?

- A. $Mv^2 / 4mc$**
- B. $Mv^2 / 2mc$
- C. $mv^2 / 4Mc$
- D. $mv^2 / 2Mc$

35 Which of the following is not an assumption of the kinetic model of an ideal gas?

- A. particles collide elastically
- B. kinetic energy of a given particle is same**

THERMODYNAMICS

C. the duration of collision between molecules is very short
 D. intermolecular potential energy of the molecules is zero

36 Which one of the following is not the unit of heat?

- A. Calorie
- B. Joule
- C. Watt.sec
- D. **Watt**

37 A sealed container contains water at 10 degrees C and 0 degrees C. If the system is thermally isolated, then what happens to the total energy of the system?

- A. It decreases
- B. It increases
- C. It increases then remains same
- D. **It remains same**

38 If the temperature of a reservoir of carnot engine working with efficiency 70% is 1000K, then temperature of sink is

- A. **300K**
- B. 400K
- C. 500K
- D. 700K

39 A reversible carnot engine converts 1/6th of heat into input work then efficiency of engine is

- A. 0.5
- B. 0.6
- C. **0.1666**
- D. 0.32

40 A sample of 0.1g of water at 100 degree C and normal pressure ($1.013 \times 10^5 \text{ Nm}^{-2}$) requires 54 cal of heat energy to convert to steam at 100 degree C. If the volume of the steam produced is 167.1 cc, the change in internal energy of the sample, is

- A. 104.3 kJ
- B. **208.6kJ**
- C. 42.2 kJ
- D. 84.5 kJ

41 In Thermodynamics first law is related with

- A. Pressure conservation
- B. Entropy conservation
- C. Temperature conservation
- D. **Energy Conservation**

42 The efficiency of the heat engine can be defined as:...

- A. $Q_2 / 1 - Q_1$
- B. $Q_2 / 1 + Q_1$
- C. $Q_1 / 1 - Q_2$
- D. $Q_1 / 1 + Q_2$

43 A liquid has mass m and specific heat capacity c. The rate of change in temperature of liquid is R. What is the rate at which heat is transferred from the liquid.

- A. Rmc
- B. R / mc
- C. mc / R
- D. Rm / c

44 During an isothermal process which of the following is true?

- A. Temperature increases
- B. Temperature decreases
- C. **$dW = dQ$**
- D. None of them

45 A thermally insulated rigid container contains an ideal gas. It is heated through a resistance coil of 100Ω by passing a current of 1 A for five minutes, then change in internal energy of the gas is

- A. 0kJ
- B. 10kJ
- C. 20 kJ
- D. **30 kJ**

47 A monatomic gas at pressure P and Volume V expands isothermally to volume 2V and then adiabatically to volume 16V. The final pressure is

- A. 16P
- B. 64P
- C. 32P
- D. **$P/64$**

THERMODYNAMICS

48 What does the constant n represent in the equation of state for an ideal gas $PV=nRT$?

- A. number of atoms in the gas
- B. number of moles of the gas**
- C. number of nucleons
- D. number of molecules of gas

49 Temperature is defined by

- A. first law of thermodynamics
- B. Zeroth law of thermodynamics**
- C. Second law of thermodynamics
- D. Third law of thermodynamics

50 The increase in temperature of the object is an indication of:

- A. decrease in the internal energy
- B. Increase in the internal energy**
- C. increase in the potential energy only
- D. decrease in the kinetic energy only

51 If for a gas $dW=0$, $dQ<0$ then

- A. Temperature increases
- B. Pressure increases
- C. pressure decreases**
- D. Volume decreases

52 An ideal reversible heat engine has:

- A. 1 efficiency
- B. Highest efficiency**
- C. an efficiency which depends on the nature of substance
- D. none of these

53 Isothermal process can be defined as:...

- A. $PV = \text{constant}$**
- B. $PV = RT$
- C. $P/V = \text{constant}$
- D. $P/V = nRT$

54 Internal energy remains same throughout the process in

- A. adiabatic process
- B. isothermal process**
- C. cyclic process

D. both (i) and (ii)

55 The value of Boltzmann's constant, k_B , is:

- A. $8.314 \text{ J/mol}^\circ\text{K}$
- B. $1.38 \times 10^{-23} \text{ J/K}$**
- C. $6.63 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$
- D. $1.6 \times 10^{-19} \text{ C}$

56 In adiabatic expansion

- A. $\Delta U=0$
- B. $\Delta U= \text{negative}$**
- C. $\Delta U= \text{positive}$
- D. $\Delta W=0$

57 "The amount of heat transfer required to raise the temperature of one mole of the gas through 1 K at constant pressure" is called:...

- A. The molar specific heat at constant pressure**
- B. molar heat capacity
- C. specific latent heat
- D. specific heat capacity

58 In which of the following processes the heat is neither absorbed nor released by a system?

- A. isochoric
- B. isothermal
- C. adiabatic**
- D. isobaric

59 The value of Boltzmann's constant, k_B , is:

- A. $8.314 \text{ J/mol}^\circ\text{K}$
- B. $1.38 \times 10^{-23} \text{ J/K}$**
- C. $6.63 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$
- D. $1.6 \times 10^{-19} \text{ C}$

60 In adiabatic expansion

- A. $\Delta U=0$
- B. $\Delta U= \text{negative}$**
- C. $\Delta U= \text{positive}$
- D. $\Delta W=0$

61 "The amount of heat transfer required to raise the temperature of one mole of the gas through 1 K at constant pressure" is called:...

- A. The molar specific heat at constant pressure**
- B. molar heat capacity
- C. specific latent heat
- D. specific heat capacity

THERMODYNAMICS

62 The efficiency of Carnot engine can never be 1, because:....

- A. we can not achieve the higher temperature
- B. we do not have an ideal working substance
- C. there is always energy losses
- D. we need cold reservoir at absolute zero temperature, which is not available**

63 Which of the following is not as example of adiabatic process?

- A. The rapid escape of air from a burst tyre
- B. The rapid expansion and compression of air through which a sound wave is passing
- C. Cloud formation in the atmosphere
- D. slow compression or expansion of gas**

64 Two containers hold an ideal gas at the same temperature and pressure. Both containers hold the same type of gas, but container B has twice the volume of container A. What is the average translational kinetic energy per molecule in container B?

- A. twice that of container A
- B. the same as that of container A
- C. half that of container A**
- D. impossible to determine

65 Internal energy is _____ of path

- A. independent**
- B. dependent
- C. Highly dependent
- D. Not enough information

66 An ideal gas at 15.5°C and a pressure of 1.72×10^5 Pa occupies a volume of 2.81 m^3 . How many moles of gas are present?

- A. 2.01 mol
- B. 21 mol
- C. 201 mol**
- D. 2001 mol

67 The energy input to an engine is 4.00 times greater than the work it performs. What fraction of the energy input is expelled to the cold reservoir?

- A. 0.25
- B. 0.75**
- C. 1
- D. impossible to determine

68 A temperature of 162°C is equivalent to what temperature in kelvins?

- A. -111 K
- B. 362 K
- C. 425 K**
- D. 111 K

69 The Boltzmann's constant, k_B , is defined as:....

- A. $N_A + R$
- B. R/N_A**
- C. N_A / R
- D. $N_A \times R$

70 A gas expands 0.25 m^3 at constant pressure 10^3 N/m^2 then work done is

- A. 0.25 ergs
- B. 25 ergs
- C. 250 joules**
- D. 250 W

71 Slope of adiabatic(k_s) and isothermal(k_t) curve related as

- A. $k_s = \gamma k_t$**
- B. $k_s = k_t / \gamma$
- C. $k_s = k_t$
- D. $k_s = 2k_t$

72 Molar mass of water is

- A. 0.018 kg/mol**
- B. 0.108 kg/mol
- C. 0.027 kg/mol
- D. 0.0635 kg/mol

73 An ideal gas at 15.5°C and a pressure of 1.72×10^5 Pa occupies a volume of 2.81 m^3 . If the volume is raised to 4.16 m^3 and the temperature raised to 28.2°C, what will be the pressure of the gas?

- A. 121×10^5 Pa
- B. 1.21×10^5 Pa**
- C. 1.21 Pa
- D. 121 Pa

74 Heat reservoir is a _____ Temperature

- A. bath
- B. Constant**
- C. Variable

THERMODYNAMICS

D. zero

75 A monatomic ideal gas is thermally insulated, so no heat can flow between it and its surroundings. Is it possible for the temperature of the gas to rise?

A. Yes. The temperature can rise if work is done by the gas

B. No. The only way that the temperature can rise is if heat is added to the gas

C. Yes. The temperature can rise if work is done on the gas

D. No. The only way that the temperature can rise is by adding more molecules in container

76 If the heat absorbed is 10J and Work done is 5 J, then change in internal energy is

A. -5J

B. 10J

C. 15J

D. 5J

77 In which process the net work done is zero?

A. Cyclic

B. Free expansion

C. Isochoric

D. Adiabatic

78 During an adiabatic process the pressure of the gas is found to be proportional to fourth power of temperature. The ideal gas would be

A. H₂

B. He

C. CH₂

D. mixture of H₂ and He

79 Which of the following is equivalent to a temperature -150°C?

A. 123K

B. -123 K

C. 423 K

D. -423 K

80 The heat required to raise the temperature of one mole of the substance through 1 K is called:...

A. specific latent heat

B. molar heat capacity

C. molar specific heat

D. specific heat capacity

81 If $P = P_0$ and $V = V_0$ gas expands isothermally to $P = 3P_0$ then Volume is

A. $3V_0$

B. $2V_0$

C. $V_0/3$

D. $V_0/2$

82 If 1 mole of an ideal gas is heated at constant volume so that its temperature rises by ΔT , then first law of thermodynamics can be written as:...

A. $\Delta U + C_v = \Delta T$

B. $\Delta U = C_v - \Delta T$

C. $\Delta U = C_v \Delta T$

D. $\Delta U = C_v + \Delta T$

83 Specific latent heat of fusion of ice is 334 J/g. How much energy is needed to melt 2 kg of ice at 0°C.

A. 6.68×10^5 J

B. 6.68×10^5 kJ

C. 668 J

D. 668 kJ

84 The energy input to an engine is 4.00 times greater than the work it performs. What is its thermal efficiency?

A. 4.00

B. 1.00

C. 0.25

D. impossible to determine

85 Efficiency of heat engine in Terms of Temperature of reservoir and sink is defined as

A. T_1/T_2

B. $1 + T_1/T_2$

C. $1 - T_1/T_2$

D. T_2/T_1

86 Internal energy of the system depends on:.....

A. initial and final states of the system and the path from initial to final state

THERMODYNAMICS

- B. initial and final states of the system only
 C. initial state of the system and the path from initial to final state

86 A refrigerator operates for a certain time, and the work done by the electrical energy during this time is $W=1000\text{J}$. What can be said about the heat delivered to the room containing the refrigerator?

- A. The heat delivered to the room is less than 1000J
 B. The heat delivered to the room is equal to 1000J
C. The heat delivered to the room is greater than 1000J
 D. No heat is delivered to the room

87 Some ice, at its melting point, is added to $m\text{ kg}$ of water at initial temperature 290K . If c is the specific heat capacity of water and L is latent heat of fusion of ice. Ice melts completely. Final temperature of the water is 273K . What is the minimum mass of ice that is required?

- A. $17mc - L$**
 B. $L - 17mc$
 C. $17m - Lc$
 D. $290m - Lc$

88 Adiabatic process can be defined as:...

- A. $PV^\gamma = \text{constant}$**
 B. $PV^\gamma = RT$
 C. $P / V^\gamma = \text{constant}$
 D. $PV^\gamma = nRT$

89 Two identical gases expand i) isothermally ii) adiabatically. Work done is more in

- A. Isothermal process**
 B. Adiabatic process
 C. Neither of them
 D. equal in both case

90 100W heater is used to heat 500g of water from 20°C to 50°C . How long should the heater be switched on? Specific heat capacity of water is 4.2J/gC .

- A. 63sec
 B. 63min
C. 630sec
 D. 6.3min

91 Which of the following is the statement of first law of thermodynamics?

- A. difference between heat given to the system and work done by the system appears as internal energy of the system**
 B. difference between work done and change in internal energy is equal to the heat absorbed by the system
 C. sum of heat absorbed and the increase in internal energy is equal to the work done by the system
 D. sum of heat absorbed and the work done by the system is equal to the decrease in internal energy of the system

92 A heater is used for 5 minutes to heat 500g of water from 20°C to 50°C . What is the power of heater? Specific heat capacity of water is 4.2J/gC .

- A. 1260W**
 B. 12.6kW
 C. 210kW
 D. 12.6W

93 Which of the following is equivalent to a temperature 150K ?

- A. 123°C
B. -123°C
 C. 423°C
 D. -423°C

94 Equal masses of paraffin and water are mixed in a container of negligible thermal capacity. Initial temperature of water is 80°C and that of paraffin is 20°C . The final temperature of mixture is:.....

- A. 70°C
 B. 60°C
C. 50°C
 D. 40°C

95 Two spheres are made of the same metal and have the same radius, but one is hollow and the other is solid. The spheres are taken through the same temperature increase. Which sphere expands more?

- A. They expand by the same amount
 B. The hollow sphere expands more
 C. The solid sphere expands more
D. There is not enough information to say

THERMODYNAMICS

96 Which one of the following process is irreversible?

- A. Slow compressions of an elastic spring
- B. Slow evaporation of a substance in an isolated vessel
- C. Slow compression of a gas
- D. a chemical explosion**

97 100 W heater is used to melt 50 g of ice at 0°C. How long should the heater be switched on? Specific latent heat of fusion of ice is 334 J/g.

- A. 28 min
- B. 16.7 min
- C. 2.8 min**
- D. 167 min

98 The energy input to an engine is 60 J, and the work it performs is 15 J. What is its thermal efficiency?

- A. 4.00
- B. 1.00
- C. 0.25**
- D. impossible to determine

99 The efficiency of petrol engine is:....

- A. 10% to 25%
- B. 25% to 30%**
- C. 30% to 40%
- D. 40% to 50%

100 The work done can also be calculated by:

- A. gradient of tangent of the, curve of P-V graph
- B. area of the curve under P-V graph**
- C. area of the, curve under P-T graph
- D. gradient of tangent of the, curve of P-T graph

101 For an adiabatic process, the first law of thermodynamics can be written as:...

- A. work done by the system = decrease in internal energy of system**
- B. work done by the system = increase in internal energy of system
- C. work done on the system = decrease in internal energy of system
- D. work done on the system = decrease in internal energy of system + heat released

102 A reversible carnot engine converts 1/6th of heat into input work. When the temperature of sink is reduced by 62 degree C then efficiency is doubled then temperature of source and sink is

- A. 80 C , 37 C
- B. 99 C , 30C
- C. 99C , 25C
- D. 99C , 37C**

103 Under which conditions, a real gas approximate to an ideal gas?

- A. pressure = high density = high
- B. pressure = low density = high
- C. pressure = high density = low
- D. pressure = low density = low**

104 Which of the following is equivalent to a temperature -50°C?

- A. -223K
- B. 223 K**
- C. -323 K
- D. 323 K

105 A cycle tyre bursts suddenly is an example of

- A. Isothermal process
- B. Isochoric process
- C. adiabatic process**
- D. Isobaric process

106 A monatomic gas is heated from temperature T₁ and T₂ under two different conditions at (i) constant Volume and (ii) constant pressure. So change in U is

- A. More for (i)
- B. More for (ii)
- C. same for both**
- D. independent of number of moles

107 Which of the following is an assumption of the kinetic model of an ideal gas?

- A. gas is at high pressure
- B. collision between particles are el**
- C. there are weak forces of attraction between particles in gas
- D. total energy of particles is proportional to the temperature

108 P-V diagram of a diatomic gas is a straight line passing through origin. What is the molar heat capacity of the gas in the process?

- A. R
- B. 1.5R

THERMODYNAMICS

C. 3R

D. $4R/3$

109 Amount of heat supplied to 0.02 kg of nitrogen to raise its temperature by 45 degree is

A. 935J

B. 934J

C. 967J

D. 954J

110 A closed container contains an ideal gas. Which of the following changes will result in decrease in temperature?

A. volume = decrease temperature = decrease

B. volume = decrease temperature = increase

C. volume = increase temperature = decrease

D. volume = increase temperature = increase

111 The value of universal gas, R, constant is:....

A. 8.314 J/mol.K

B. 1.38×10^{-23} J/K

C. 6.63×10^{-11} Nm²/kg²

D. 1.6×10^{-19} C

112 For an isothermal process, the first law of thermodynamics can be written as:...

A. heat absorbed = work done on the system

B. heat absorbed = work done by the system

C. heat released = work done by the system

D. heat released = work done by the system + change in internal energy

113 During an adiabatic process pressure of gas is found to be proportional to the cube of its temperature. The ratio of C_p/C_v is

A. 2

B. 44319

C. 44257

D. 44289

114 The efficiency of diesel engine is:....

A. 10% to 20%

B. 20% to 35%

C. 35% to 40%

D. 40% to 50%

115 A 1.0 kW heater supplies energy to a liquid of mass 1 kg. The temperature of the liquid changes by 80 K in a

time of 400 s. The specific heat capacity of the liquid is $4.0 \text{ kJ / kg}^\circ\text{K}$. What is the average power lost by the liquid?

A. 100

B. 200

C. 400

D. 800

116 A heater is used for 5 minutes to heat 500 g of water from 20°C to 50°C. What is the power of heater? Specific heat capacity of water is $4.2 \text{ J/g}^\circ\text{C}$.

A. 1260 W

B. 12.6 kW

C. 210 kW

D. 12.6 W

117 For ideal polyatomic gas molar specific heat is equal to

A. 24.9 J/mol.K

B. 12.9 J/mol.K

C. 15 J/mol.K

D. 16 J/mol.K

118 Two containers X and Y are filled with an ideal gas. X has 1 mol of gas and Y has 2 mol of gas.

Volume of Y is four times that of X. Pressure in Y is half that in X. What is temperature of gas in Y ----- temperature of gas in X

A. 2

B. 1

C. 1 ---- 2

D. 1 ---- 4

119 The value of triple point of water is:....

A. 1 K

B. 100 K

C. 273.16 K

D. 0 K

120 The energy input to an engine is 4.00 times greater than the work it performs. What is its thermal efficiency?

A. 4.00

B. 1.00

C. 0.25

D. impossible to determine

121 300 W heater is used to boil 500g of water at 100°C. How long should the heater be switched on?

THERMODYNAMICS

Specific latent heat of vaporization of water is 2230 J/g.

A. 62 mins

B. 62 sec

C. 1.5 hour

D. 0.5 hour

122 The internal energy change in system that has absorbed 2kcal of heat and done 500J of work is

A. 8900J

B. 8800J

C. 7900J

D. 7500J

123 An ideal gas has a volume of 20 ml, a temperature of 10 °C and a pressure of 100 kPa. The volume of the gas is reduced to 10 ml and the temperature is raised to 20 °C. What is the new pressure of the gas?

A. 370 kPa

B. 207 kPa

C. 400 kPa

D. 27 kPa

124 How much energy is required to raise the temperature of 5.00 kg of lead from 20.0°C to its melting point of 327°C? The specific heat of lead is 128 J/kg °C.

A. 1.96×10^5 J

B. 4.04×10^5 J

C. 1.07×10^5 J

D. 8.15×10^4 J

125 A reversible carnot engine converts 1/6th of heat into input work. When the temperature of sink is reduced by 62 degree C then efficiency is doubled then temperature of source and sink is

A. 80 C , 37 C

B. 99 C , 30C

C. 99C , 25C

D. 99C , 37C

126 Isothermal system has constant

A. Temperature

B. Pressure

C. Entropy

D. Energy Conservation

127 An adiabatic change is the one in which:....

A. No heat is added to or taken out of a system

B. No change of temperature takes place

C. Boyle's law is applicable

D. Pressure and volume remains constant

128 If Q, E and W are the parameters in cyclic process then

A. $W=0$

B. $Q=0=W$

C. $E=0$

D. $W=0$

129 The energy input to an engine is 4.00 times greater than the work it performs. What fraction of the energy input is expelled to the cold reservoir?

A. 0.25

B. 0.75

C. 1

D. impossible to determine

130 300 W heater is used to boil 500g of water at 100C. How long should the heater be switched on? Specific latent heat of vaporization of water is 2230 J/g.

A. 62 mins

B. 62 sec

C. 1.5 hour

D. 0.5 hour

131 When an ideal gas of constant mass is heated in a container of fixed volume. What is the reason for the increase in pressure of the gas?

A. number of molecules per unit volume increases

B. molecules occupy greater volume of the container

C. average force per impact at the container wall increases

D. molecules collide with each other with greater force

132 If the system goes from two different paths to same final state then change in internal energy for both systems is _____

B. different

C. may be same

D. Not enough information

133 Which statement is incorrect?

A. In a isobaric process $\Delta P=0$

B. In a isochoric process $\Delta W=0$

C. In a isothermal process $\Delta T=0$

D. In a isothermal process ΔQ

THERMODYNAMICS

134 The turbine in a steam power plant takes steam from a boiler at 427°C and exhausts into a low temperature reservoir at 77°C . What is the maximum possible efficiency?

- A. 20%
- B. 25%
- C. 4%
- D. 50 %**

135 The energy input to an engine is 4.00 times greater than the work it performs. What is its thermal efficiency?

- A. 4.00
- B. 1.00
- C. 0.25**
- D. impossible to determine

136 During an adiabatic process the pressure of the gas is found to be proportional to fourth power of temperature. The ideal gas would be

- A. H_2
- B. He
- C. CH_2**
- D. mixture of H_2 and He

137 Which of the following process is reversible ?

- A. Transfer of heat by radiation
- B. Electrical heating by nichrome wire
- C. Transfer of heat by conduction
- D. Isothermal compression**

138 Which of the following cannot determine the state of thermodynamic system?

- A. P and V
- B. P and T
- C. T and V
- D. P and R**

139 What are the units of the ratio: specific latent heat of vaporization of water -----
 ----- specific heat capacity of water

- A. K**
- B. 1 ----- K
- C. K^2
- D. no unit

140 During adiabatic expansion internal energy decreases by 2J, then work done in this process is

- A. 2J**
- B. 1J
- C. -1J
- D. -2J

141 If system changes from a state $P_1 V_1$ to $P_2 V_2$ by two paths then quantity which remains unchanged is

- A. dQ
- B. dW
- C. $dQ - dW$**
- D. $dQ + dW$

142 If dU and dW represent internal energy and work done then which is true?

- A. $dU = -dW$ in a adiabatic process**
- B. $dU = dW$ in Isothermal process
- C. $dU = dW$ in adiabatic process
- D. $dU = -dW$ in isothermal process

143 If N is the number of molecules of a gas in a container. Then number of moles can be calculated as:....

- A. $N \times N_A$
- B. $N_A \text{ ----- } N$
- C. $N \text{ ---- } N_A$**
- D. $N * N_A$

144 The energy input to an engine is 4.00 times greater than the work it performs. What fraction of the energy input is expelled to the cold reservoir?

- A. 0.25
- B. 0.75**
- C. 1
- D. impossible to determine

145 Specific heat of water is

- A. 1J/K.g
- B. 4.18J/Kg.K
- C. 4180J/kg.K**
- D. 2090J/kg.K

146 The engine is supposed to work between 727°C and 227°C , then maximum possible efficiency is

- A. $1/2$**
- B. $1/4$
- C. $3/4$

THERMODYNAMICS

D. 1

147 Work done in an adiabatic process of gas from T_1 to T_2 is

A. $nR/(\gamma-1)(T_1-T_2)$

B. $nR/(\gamma-1)(T_2-T_1)$

C. $nR(T_2-T_1)$

D. $R(T_2-T_1)$

148 For ideal polyatomic gas molar specific heat is equal to

A. 24.9 J/mol.K

B. 12.9 J/mol.K

C. 15 J/mol.K

D. 16 J/mol.K

149 A fraction of internal energy is due to the molecular vibration, which is different in different states of matter. Which of the following gives the correct order of fraction of internal energy due to molecular vibration?

A. solid > gas > liquid

B. gas > liquid > solid

C. solid > liquid > gas

D. gas > liquid > solid

150 In Thermodynamics zeroth law is related with

A. Work

B. Energy

C. Thermal equilibrium

D. Entropy

151 Under a cyclic path, internal energy after complete cycle is same as

A. 2(initial)

B. initial heat

C. initial internal energy

D. initial work

152 A 500 W electric heater is used to heat 1 kg of water without energy losses. The specific heat capacity of water is 4.2 kJ kg K. What is the time taken to heat the water from 25 °C to 75 °C?

A. 7 seconds

B. 42 seconds

C. 7 minutes

D. 420 minutes

153 154 The efficiency of the heat engine can be increased by:...

A. decreasing the temperature of high temperature reservoir

B. increasing the temperature of high temperature reservoir

C. increasing the temperature of low temperature reservoir

D. increasing the temperature of both high temperature reservoir and low temperature reservoir

154 In the VT diagram slope of curve is

A. R

B. nR/P

C. P

D. R/P

155 100 W heater is switched on for 5 minutes to melt ice. What is the mass of ice that melts at 0°C. Specific latent heat of fusion of ice is 334 J/g.

A. 90 g

B. 90 kg

C. 1.5 g

D. 1.5 kg

156 The efficiency of the heat engine can be defined as:...

A. $Q_2 - Q_1$

B. $Q_2 - Q_1$

C. $Q_1 - Q_2$

D. $Q_1 - Q_2$

157 First law of thermodynamics is a special case of

A. Newton's law

B. Charles's law

C. Conservation of energy

D. Conservation of entropy

158 The molar specific heat of a diatomic gas is measured at constant volume and found to be 29.1 J/mol °K. What are the types of energy that are contributing to the molar specific heat?

A. translation only

B. translation and rotation only

C. translation and vibrational only

D. translation, rotation, and vibrational

159 Amount of heat supplied to 0.02 kg of nitrogen to raise its temperature by 45 degree is

A. 935J

B. 934J

C. 967J

D. 954J

160 All changes which occur suddenly or which involve friction or dissipation of energy through conduction, convection or radiation are:....

A. irreversible changes

B. chemical changes

C. cyclic changes

D. reversible changes

THERMODYNAMICS

161 When we heat a substance, energy associated with its atoms or molecules is increased. It means...

- A. heat is converted to internal energy**
- B. heat is converted to only potential energy of the particles
- C. heat is converted to only kinetic energy of the particles
- D. heat is converted to temperature of gas

162 When the amount of work done is 33 cal and internal energy is 167 cal then heat supplied is

- A. 167 cal
- B. 175 cal
- C. 500 cal**
- D. 600 cal

163 Which of the following statement is not true about heat engine?

- A. All real engines are less efficient than Carnot engine
- B. All real engines are less efficient due to friction and heat losses
- C. efficiency of Carnot engine working between same two temperatures, depends on the nature of working substance**
- D. the larger the temperature difference of two reservoirs, the greater is the efficiency

164 A reversible carnot engine converts 1/6th of heat into input work. When the temperature of sink is reduced by 62 degree C then efficiency is doubled then temperature of source and sink is

- A. 80 C , 37 C
- B. 99 C , 30C
- C. 99C , 25C
- D. 99C , 37C**

165 A succession of events which bring the system back to its initial condition is called:....

- A. oscillation
- B. vibration
- C. cycle**
- D. circle

166 Under which conditions, a real gas approximate to an ideal gas?

- A. pressure = high density = high
- B. pressure = low density = high
- C. pressure = high density = low
- D. pressure = low density = low**

167 One kcal =

- A. 4.18 J
- B. 4180 J**
- C. 2.09 J
- D. 2090 J

168 An ideal reversible heat engine is 1 efficient only if:

- A. hot reservoir is at 0K
- B. hot reservoir is at 0C
- C. cold reservoir is at 0C
- D. cold reservoir is at 0K**

169 Which of the following is not an assumption of the kinetic model of an ideal gas?

- A. collisions between molecules and walls of container are elastic
- B. the duration of collision between molecules is very short
- C. all particles of gas has same speed**
- D. all particles of gas have same mass

170 The energy input to an engine is 60 J, and the work it performs is 15 J. What fraction of the energy input is expelled to the cold reservoir?

- A. 0.25
- B. 75%**
- C. 1
- D. impossible to determine

171 P-V diagram of a diatomic gas is a straight line passing through origin. What is the molar heat capacity of the gas in the process?

- A. R
- B. 1.5R
- C. 3R**
- D. 4R/3

THERMODYNAMICS

172 Which of the following is equivalent to a temperature -50°C ?

- A. -223K
- B. 223K**
- C. -323K
- D. 323K

173 If heat given is 6 kcal and work done is 6 kJ , then internal energy is

- A. 19.1 kJ**
- B. 25.2 kJ
- C. 25 kJ
- D. Zero

174 Specific latent heat of fusion of ice is 334 J/g . How much energy is needed to melt 100 g of ice at 0°C .

- A. 33.4 J
- B. 33.4 kJ**
- C. 3.34 J
- D. 3.34 kJ

175 Which of this is constant in isothermal process?

- A. total heat
- B. work done
- C. Entropy
- D. Internal energy**

176 An ideal gas of n moles is enclosed in a container at a constant pressure p . The graph between volume of gas and its absolute temperature is a straight line. What is the gradient of the graph?

- A. nR ----- p**
- B. nR P
- C. n ---- R P
- D. n p ----- R

177 The efficiency of diesel engine is:....

- A. 10% to 20%
- B. 20% to 35%
- C. 35% to 40%**
- D. 40% to 50%

178 If $1.002 \times 10^6\text{ J}$ of thermal energy is required to melt some ice at its melting point, what is the mass of ice that melts? Specific latent heat of fusion of ice is 334 J/g

- A. 1 kg
- B. 2 kg
- C. 3 kg**
- D. 4 kg

179 When heat is given to isobaric process then

- A. Work is done by the gas
- B. Internal energy of gas decreases
- C. Both (a) and (b)**
- D. None of them

180 100 W heater is used to melt 50 g of ice at 0°C . How long should the heater be switched on? Specific latent heat of fusion of ice is 334 J/g .

- A. 28 min
- B. 16.7 min
- C. 2.8 min**
- D. 167 min

181 A thermodynamic system undergoes a process in which its internal energy decreases by 300 J . If at the same time 120 J of work is done on the system, find the heat lost by the system

- A. -420 J**
- B. 420 J
- C. 80 J
- D. -80 J

182 The energy input to an engine is 4.00 times greater than the work it performs. What is its thermal efficiency?

- A. 4.00
- B. 1.00
- C. 0.25**
- D. impossible to determine

183 What does the constant N represent in the equation of state for an ideal gas $PV = NkT$?

- A. number of molecules of gas**
- B. number of moles of the gas
- C. number of nucleons

THERMODYNAMICS

D. number of protons

184 Which of the following is equivalent to a temperature 150K?

- A. 123 C
- B. -123 C**
- C. 423 C
- D. -423 C

185 An adiabatic change is the one in which:....

- A. No heat is added to or taken out of a system**
- B. No change of temperature takes place
- C. Boyle's law is applicable
- D. Pressure and volume remains constant

186 In which process the net work done is zero?

- A. Cyclic
- B. Free expansion**
- C. Isochoric
- D. Adiabatic

187 100 W heater is used for 5 minutes to heat 500 g of water. What is the change in temperature of water? Specific heat capacity of water is 4.2 J/gC.

- A. 140C
- B. 40C
- C. 0.2 C
- D. 14C**

188 A closed container contains an ideal gas. Which of the following changes will result in decrease in temperature?

- A. volume = decrease temperature = decrease
- B. volume = decrease temperature = increase
- C. volume = increase temperature = decrease**
- D. volume = increase temperature = increase

189 The value of Boltzmann's constant, k_B , is:

- A. 8.314 J/mol*K
- B. 1.38×10^{-23} J/K**
- C. 6.63×10^{-11} Nm²/kg²
- D. 1.6×10^{-19} C

190 100 W heater is used to melt 50 g of ice at 0C. How long should the heater be switched on? Specific latent heat of fusion of ice is 334 J/g.

- A. 28 min
- B. 16.7 min
- C. 2.8 min**
- D. 167 min

191 Which of the following is not an assumption of the kinetic model of an ideal gas?

- A. The size of the molecules is much smaller than the separation between molecules
- B. Molecules suffer negligible momentum change during wall collisions.**
- C. Molecules do not exert force on each other except during a collision.
- D. The gas molecules are in random motion and may change their direction of motion after every collision

193 A heat engine performs 100 J of work and at the same time rejects 400 J of heat energy to the cold reservoirs. What is the efficiency of the engine?

- A. 20%**
- B. 25%
- C. 4%
- D. 50 %

194 A fixed mass of an ideal gas is contained in a cylinder at constant temperature. Now the pressure of the gas is decreased. What happened to the molecules of gas?

- A. their mean square speed decreases
- B. number of collision between molecules and walls of container decreased**
- C. the force of attraction between them increase
- D. their size decreases

195 Which of this is constant in isochoric process?

- A. total heat
- B. work done**
- C. Entropy
- D. Internal energy

196 A gas expands from V_1 to V_2 at pressure P . Work done is

- A. $P/(V_2-V_1)$
- B. $(P_2-P_1)V$
- C. $P(V_1V_2/(V_2-V_1))$

THERMODYNAMICS

D. $P(V_2 - V_1)$

197 According to First law of thermodynamics,

A. $dQ = dW - dU$

B. $dQ = dU$

C. $dQ = dU + dW$

D. $dQ = dW$

198 Which of the following is a thermodynamic coordinate

A. P

B. T

C. V

D. R

199 What does the constant N represent in the equation of state for an ideal gas $PV = NkT$?

A. number of molecules of gas

B. number of moles of the gas

C. number of nucleons

D. number of protons

200 Work done in a isobaric process is given by

A. PdT

B. PdV

C. VdP

D. P^2dV

201 The energy input to an engine is 60 J, and the work it performs is 15 J. What fraction of the energy input is expelled to the cold reservoir?

A. 0.25

B. 75%

C. 1

D. impossible to determine

202 What is the internal energy change in system that has absorbed 800J of heat and work done is 500J?

A. 200J

B. 550J

C. 600J

D. 300J

203 First law of thermodynamics state

A. system can do work

B. system has temperature

C. system has pressure

D. Heat is form of energy

204 Cyclic path is one in which initial state is equal to

A. 2(final state)

B. final state

C. 3(final state)

D. Not enough information

205 A common material for cushioning objects in packages is made by trapping bubbles of air between sheets of plastic. Is this material more effective at keeping the contents of the package from moving around inside the package on

A. a hot day

B. a cold day

C. either hot or cold days

D. There is not enough information to say

206 Initial pressure and volume are P and V respectively. First it expanded isothermally to 4V then compressed adiabatically to Volume V, the final pressure is

A. 2P

B. 1P

C. 3P

D. 4P

207 Initial mass of water, at its boiling point, is 0.8 kg. 4 kW of heater is used to boil it completely. Assuming the specific latent heat of vaporization of water is 2MJ/kg, what is the time taken to vaporize all the water?

A. 400 s

B. 4000 s

C. 250 s

D. 2500 s

THERMODYNAMICS

208 If the system goes from two different paths to same final state then Q_1 and W_1 and Q_2 and W_2 are heat absorbed and work done then

- A. $Q_1 = Q_2$
- B. $W_1 = W_2$
- C. $Q_1 + W_1 = Q_2 + W_2$
- D. $Q_1 - W_1 = Q_2 - W_2$**

209 300 W heater is used to boil 500g of water at 100°C. How long should the heater be switched on? Specific latent heat of vaporization of water is 2230 J/g.

- A. 62 mins**
- B. 62 sec
- C. 1.5 hour
- D. 0.5 hour

210 Which of the following is not an assumption of the kinetic model of an ideal gas?

- A. particles collide elastically
- B. kinetic energy of a given particle is same**
- C. the duration of collision between molecules is very short
- D. intermolecular potential energy of the molecules is zero

211 A sealed container contains water at 10 degrees C and 0 degrees C. If the system is thermally isolated, then what happens to the total energy of the system?

- A. it decreases
- B. it increases
- C. it increases then remains same
- D. it remains same**

212 A reversible carnot engine converts 1/6th of heat into input work then efficiency of engine is

- A. 0.5
- B. 0.6
- C. 0.1666**
- D. 0.32

213 A sample of 0.1g of water at 100 degree C and normal pressure ($1.013 \times 10^5 \text{ Nm}^{-2}$) requires 54 cal of heat energy to convert to steam at 100 degree C. If the volume of the steam produced is 167.1 cc, the change in internal energy of the sample, is

- A. 104.3 kJ
- B. 208.6 kJ**
- C. 42.2 kJ
- D. 84.5 kJ

214 In Thermodynamics first law is related with

- A. Pressure conservation
- B. Entropy conservation
- C. Temperature conservation
- D. Energy Conservation**

215 A liquid has mass m and specific heat capacity c . The rate of change in temperature of liquid is R . What is the rate at which heat is transferred from the liquid.

- A. Rmc**
- B. $R \text{ --- } mc$
- C. $mc \text{ --- } R$
- D. $Rm \text{ --- } c$

216 During an isothermal process which of the following is true?

- A. Temperature increases
- B. Temperature decreases
- C. $dW = dQ$**
- D. None of them

217 A thermally insulated rigid container contains an ideal gas. It is heated through a resistance coil of 100Ω by passing a current of 1 A for five minutes, then change in internal energy of the gas is

- A. 0kJ
- B. 10kJ
- C. 20 kJ
- D. 30 kJ**

ELECTROSTATICS

1 Photocopier and ink-jet printer are application of:....

- A. electrostatics**
- B. magnetism
- C. thermal physics
- D. quantum physics

2 Coulomb's law is only applicable for

- A. big charges
- B. small charges
- C. point charges**
- D. any charges

3 You have three capacitors, each of $2\ \mu\text{C}$. In which of the following combinations of the three capacitors, the resultant capacitance is $3\ \mu\text{C}$?

- A. all three capacitors in series
- B. two capacitors are in series, one in parallel**
- C. two capacitors are in parallel, one in series
- D. all three capacitors in parallel

4 A particle carrying a charge $3e$, accelerates through a potential difference of 2V . The energy acquired by it is:...

- A. $1.6 \times 10^{-19}\text{ J}$
- B. $9.6 \times 10^{-19}\text{ J}$**
- C. $9.6 \times 10^{-18}\text{ J}$
- D. $1.6 \times 10^{-18}\text{ J}$

5 An electron is held within electric field. What happens when electron is released?

- A. it moves in the direction of electric field
- B. it accelerates in the direction of electric field
- C. it moves in the direction opposite to electric field
- D. it accelerates in the direction opposite to electric field**

6 A capacitor of capacitance C is connected with resistance R . The time constant of the circuit would be:...

- A. RC**
- B. R/C
- C. $e^{\wedge}RC$
- D. $R+C$

7 The minimum charge on an object can not be less than:

A. $1.6 \times 10^{-19}\text{ C}$

- B. $9 \times 10^9\text{ C}$
- C. $9.1 \times 10^{-31}\text{ C}$
- D. $1.6 \times 10^{-27}\text{ C}$

8 A negative point charge is moving along a circular orbit around a positive point charge. Which aspect(s) of the electric force on the negative point charge will remain constant as it moves?

- A. direction
- B. magnitude**
- C. both direction and magnitude
- D. neither direction and magnitude

9 The value of K depends upon

- A. charges
- B. system of units and medium**
- C. the distance between charges
- D. Nature of medium

10 Consider a capacitor has vacuum in the space between the conductors. If we double the amount of charge on each conductor, what happens to the capacitance?

- A. it increases
- B. it decreases
- C. it remains same**
- D. it depends on the size or shape of the conductors

11 Three charges $+3q$, $+q$ and Q are placed on a straight line with equal separation. In order to make the net force on q to be zero, the value of Q will be

- A. $3q$**
- B. $2q$
- C. $4q$
- D. $5q$

12 For a parallel plate capacitor, the energy density is:.....

- A. $\frac{1}{2} \epsilon \epsilon_0 E$
- B. $\frac{1}{2} \epsilon \epsilon_0 E^2$**
- C. $\epsilon \epsilon_0 E$
- D. $\epsilon \epsilon_0 E^2$

13 Consider a charge q is placed in a region where both electric and magnetic fields are present. The charge will experience:...

ELECTROSTATICS

A. both electric and magnetic forces

B. only electric force

C. only magnetic force

D. no force at all

14 If the potential difference across the two plates of a parallel plate capacitor is doubled, then energy stored in the capacitor would be:...

A. remains same

B. two times

C. four times

D. three times

15 Object A has a charge of 15 mC, and object B has a charge of 10 mC. Which statement is true about the electric forces on the objects?

A. $F_{AB} = -3 F_{BA}$

B. $F_{AB} = - F_{BA}$

C. $3 F_{AB} = - F_{BA}$

D. $3 F_{AB} = 2 F_{BA}$

16 Which two or more of the following actions would increase the energy stored in a parallel plate capacitor when a constant potential difference is applied across the plates?

A. Decreasing the area of the plates
Decreasing the separation between the plates

B. Decreasing the area of the plates
Increasing the separation between the plates
Inserting a dielectric between the plates

**C. Increasing the area of the plates
Decreasing the separation between the plates
Inserting a dielectric between the plates**

D. Increasing the area of the plates
Increasing the separation between the plates

17 A proton has mass m and charge q . It is suspended in electric and gravitational field. What is the magnitude of electric field?

A. $E = m \cdot g / q$

B. $E = m \cdot g / q \cdot v$

C. $E = m \cdot g / q \cdot v \cdot B$

D. $E = q / m \cdot g$

18 The value for ϵ_r for air is:...

A. 1.6

B. 1.06

C. 1.006

D. 1.0006

19 For static electric field

A. $\nabla \times E = 0$

B. $\nabla \cdot E = 0$

C. $(\nabla \times E) \times E = 0$

D. $\nabla \cdot |E|^2 = 0$

20 The electric potential difference between two points A and B in an electric field can be defined as:...

A. work done in carrying a unit positive charge from infinity to B while keeping the charge in equilibrium.

B. work done in carrying a unit positive charge from A to infinity while keeping the charge in equilibrium.

C. work done in carrying a unit positive charge from A to B while keeping the charge in equilibrium.

D. work done in carrying a unit positive charge from A to B

21 Electric field at a point varies as r^0 for

A. a plane infinite sheet of charge

B. A point charge

C. Electric dipole

D. Line charge of infinite length

22 Consider two capacitors with capacitance $2\mu F$ and $4\mu F$. With which type of connection will the $4\mu F$ capacitor have a greater amount of stored energy than the $2\mu F$ capacitor?

A. series

B. parallel

C. either series nor parallel

D. neither series nor parallel

23 The units of electric intensity are:...

A. volt / meter or newton / coulomb

B. volt / meter or meter / coulomb

C. volt / coulomb or newton / coulomb

D. joule / meter or newton / coulomb

24 Consider a negative point charge is moving along a straight-line path directly toward a stationary positive point charge. Which aspect(s) of the electric force on the negative point charge will remain constant as it moves?

A. direction

B. magnitude

C. both direction and magnitude

D. neither direction and magnitude

ELECTROSTATICS

25 The value of permittivity of free space is:...

- A. $8.85 \times 10^{-12} \text{ C}^2 / (\text{N.m}^2)$
- B. $8.85 \times 10^{-12} (\text{N.m}^2)/\text{C}^2$
- C. $9.9 \times 10^{-12} \text{ C}^2 / (\text{N.m}^2)$
- D. $9.9 \times 10^{12} \text{ C}^2 / (\text{N.m}^2)$

26 Farad is defined as:....

- A. newton / volt
- B. coulomb / volt
- C. coulomb / joule
- D. coulomb / newton

27 A particle having the charge of 20 electrons on its falls through a potential difference of 100 volts. Calculate the energy acquired by it in electron volt (eV).

- A. $2.0 \times 10^{-2} \text{ eV}$
- B. $2.0 \times 10^{-3} \text{ eV}$
- C. $2.0 \times 10^2 \text{ eV}$
- D. $2.0 \times 10^3 \text{ eV}$

28 The value of coulomb constant is:...

- A. $9 \times 10^9 \text{ Nm}^2$
- B. $9 \times 10^9 \text{ Nm}^2 / \text{C}^2$
- C. $9 \times 10^{-9} \text{ Nm}^2 / \text{C}^2$
- D. $9 \times 10^{-9} \text{ Nm}^2$

29 The electric intensity between two oppositely charged electric plates is:....

- A. $E = \epsilon\epsilon_0 / \sigma$
- B. $E = \sigma + \epsilon\epsilon_0$
- C. $E = \sigma / \epsilon\epsilon_0$
- D. $E = \sigma\epsilon\epsilon_0$

30 A charge is moving with velocity v , it enters a uniform electric field E . The direction of v and E are not parallel. What is the path of the charge particle inside the electric field?

- A. parabolic
- B. circular
- C. parallel to v
- D. parallel to E

31 You have three capacitors, each of $3 \mu\text{C}$. In which of the following combinations of the three capacitors, the resultant capacitance is $1\mu\text{C}$?

- A. all three capacitors in series
- B. two capacitors are in series, one in parallel
- C. two capacitors are in parallel, one in series

D. all three capacitors in parallel

32 One coulomb charge is carried by:....

- A. $6.25 \times 10^{+18}$
- B. one electron
- C. one proton
- D. $1.6 \times 10^{+19}$

33 The electric potential at infinite distance is:....

- A. infinity
- B. zero
- C. positive
- D. negative

34 Force on a static charge q in uniform electric field E is

- A. qE
- B. $-qE$
- C. qE^2
- D. $-qE^2$

35 A particle carrying a charge $3e$, accelerates through a potential difference of 2V. The energy acquired by it is:....

- A. 6eV
- B. 1.5eV
- C. 0.66eV
- D. 12eV

36 A capacitor stores $5.3 \times 10^{-5} \text{ C}$ of charge when connected to a 6.0-V battery. How much charge does the capacitor store when connected to a 9.0-V battery?

- A. $79.5 \mu\text{C}$
- B. $35.3 \mu\text{C}$
- C. 79.5 pC
- D. 35.3 pC

37 The study of electric charges at rest in electric field is known as:...

- A. electromagnetism
- B. electrostatics
- C. quantum physics
- D. magnetism

38 You have two identical capacitors. They can be connected in series or in parallel. If you want the smallest equivalent capacitance for the combination, how should you connect them?

- A. in parallel

ELECTROSTATICS

B. in series

- C. either way because both combinations have the same capacitance
 D. we can not determine, because presence of resistance in the circuit determines capacitance

39 If the potential difference across the two plates of a parallel plate capacitor is doubled, then energy stored in the capacitor would be:...

- A. remains same
 B. two times
C. four times
 D. three times

40 Aluminum is:...

- A. an excellent conductor**
 B. a semiconductor
 C. an insulator
 D. a photoconductor

41 Electric field lines due to a positive charge are:...

- A. always horizontal
 B. always vertical
 C. radially towards the charge
D. radially away from the charge

42 A particle carrying a charge $3e$, accelerates through a potential difference of $2V$. The energy acquired by it is:...

- A. $1.6 \times 10^{-19} \text{ J}$
B. $9.6 \times 10^{-19} \text{ J}$
 C. $9.6 \times 10^{-18} \text{ J}$
 D. $1.6 \times 10^{-18} \text{ J}$

43 Electric intensity at the centre of uniformly distributed charge is

- A. Zero**
 B. Kq/r^2
 C. q/r^2
 D. q/ϵ_0

44 Which two or more of the following actions would increase the energy stored in a parallel plate capacitor when a constant potential difference is applied across the plates?

- A. Decreasing the area of the plates Decreasing the separation between the plates

B. Decreasing the area of the plates Increasing the separation between the plates Inserting a dielectric between the plates

C. Increasing the area of the plates Decreasing the separation between the plates Inserting a dielectric between the plates

D. Increasing the area of the plates Increasing the separation between the plates

45 The force between two charges Q and q , separated by a distance d is F . What will be the force between them when distance between them is $d/2$?

- A. $4F$**
 B. $2F$
 C. F
 D. $F/2$

46 Time constant is defined as the time required by the capacitor:...

- A. to deposit 63% of the equilibrium charge**
 B. to deposit 36% of the equilibrium charge
 C. to deposit 63 times of the equilibrium charge
 D. to deposit 36 times of the equilibrium charge

47 An electron is held within electric field. What happens when electron is released?

- A. it moves in the direction of electric field
 B. it accelerates in the direction of electric field
 C. it moves in the direction opposite to electric field
D. it accelerates in the direction opposite to electric field

48 If a particle have charge q is accelerated through a potential difference V , then energy acquired by the particle is:...

- A. $V/2$
 B. V/q
 C. $qV/2$
D. qV

49 Electric potential difference between the two points can be defined as:...

- A. difference of the kinetic energy per unit charge
 B. difference of the kinetic energy
C. difference of the potential energy per unit charge
 D. difference of the potential energy

ELECTROSTATICS

50 The force between two charges Q and q , separated by a distance d is F . What will be the force between them when distance between them is $d/2$?

- A. $4F$
- B. $2F$
- C. F
- D. F ----- 2

51 Force acting on a negative charge is always:....

- B. in the direction of electric field
- C. in the direction perpendicular to electric field
- D. in the direction perpendicular to the velocity of charge

Two point charges are at the distance d . If force between these two charges is F , then what is the force between charges when the distance between them is $3d$?

- A. F ----- 3
- B. F ----- 9
- C. F ----- 3 d
- D. F ----- 9 d

52 The study of electric charges at rest in electric field is known as:....

- A. electromagnetism
- B. electrostatics
- C. quantum physics
- D. magnetism

53 For a parallel plate capacitor, the energy density is:....

- A. $\frac{1}{2} \epsilon \epsilon_r \epsilon_0 E$
- B. $\frac{1}{2} \epsilon \epsilon_r \epsilon_0 E^2$
- C. $\epsilon \epsilon_r \epsilon_0 E$
- D. $\epsilon \epsilon_r \epsilon_0 E^2$

54 You have three capacitors, each of $2 \mu\text{C}$. In which of the following combinations of the three capacitors, the resultant capacitance is $5 \mu\text{C}$?

- A. all three capacitors in series
- B. two capacitors are in series, one in parallel
- C. two capacitors are in parallel, one in series
- D. all three capacitors in parallel

55 A particle carrying a charge $3e$, accelerates through a potential difference of $2V$. The energy acquired by it is:....

- A. $1.6 \times 10^{-19} \text{ J}$
- B. $9.6 \times 10^{-19} \text{ J}$
- C. $9.6 \times 10^{-18} \text{ J}$
- D. $1.6 \times 10^{-18} \text{ J}$

56 Coulomb force is a

- A. Short range force
- B. Long range force
- C. Medium range force
- D. None of these

57 Force on a proton of charge $2e$ in a magnetic field of B at 45° while moving with 2 m/s is

- A. $2\sqrt{2} eB$
- B. $4eB$
- C. $2eB$
- D. eB

58 Formula for electric field intensity is

- A. $E = F/q$
- B. $E = 3F/2q$
- C. $E = F/3q$
- D. None of them

59 Electric field lines due to a positive charge are:....

- A. always horizontal
- B. always vertical
- C. radially towards the charge
- D. radially away from the charge

60 Force acting on a negative charge is always:....

- A. in the direction opposite to electric field
- B. in the direction of electric field
- C. in the direction perpendicular to electric field
- D. in the direction perpendicular to the velocity of charge

61 Electric intensity and electric potential are related as

- A. electric field intensity is equal to the negative of the gradient of electric potential
- B. electric field intensity is equal to the gradient of electric potential
- C. electric field intensity is equal to the square of the gradient of electric potential

ELECTROSTATICS

D. electric field intensity is equal to the twice of the gradient of electric potential

62 Two point charges are at the distance d . If force between these two charges is F , then what is the force between charges when the distance between them is $3d$?

A. F ----- 3

B. F ----- 9

C. F ----- $3d$

D. F ----- $9d$

63 Coulomb per volt is called:...

A. Ampere

B. electron volt

C. Joule

D. Farad

64 The increase in the capacitance of a capacitor due to the presence of dielectric is due to:...

A. electric polarization of dielectric

B. density of dielectric

C. volume of dielectric

D. magnetic dipole moment

65 Coulomb's law is true for

A. Atomic distance

B. Nuclear distance

C. Charge as well as uncharged particle

D. All the distances

66 What is the energy stored in a capacitor of capacitance $2\mu\text{F}$ and potential difference between the plates is 12V ?

A. 12 J

B. 24 J

C. 6 J

D. $1/6\text{ J}$

67 Electric field at the centre of square when $1\mu\text{C}$ charge are placed at its each corner is

A. Zero

B. 2 Volt/m

C. 2 Volt/m

D. 4 Volt/m

68 Electric potential difference between the two points can be defined as:...

A. difference of the kinetic energy per unit charge

B. difference of the kinetic energy

C. difference of the potential energy per unit charge

D. difference of the potential energy You have three capacitors, each of $3\mu\text{C}$. In which of the following combinations of the three capacitors, the resultant capacitance is $9\mu\text{C}$?

A. all three capacitors in series

B. two capacitors are in series, one in parallel

C. two capacitors are in parallel, one in series

D. all three capacitors in parallel

69 Two equal and opposite charges separated by a small distance are said to constitute:....

A. a magnetic dipole

B. an electric dipole

C. a couple

D. an ion

70 The distance between two point charges if halved, the force between them would be:....

A. half

B. double

C. one fourth

D. four times

71 A capacitor stores charge Q at a potential difference ΔV . What happens if the voltage applied to the capacitor by a battery is doubled to $2\Delta V$?

A. the capacitance falls to half its initial value, and the charge remains the same

B. the capacitance and the charge both fall to half their initial values

C. the capacitance and the charge both double

D. the capacitance remains the same, and the charge Doubles

72 Electric field lines provide information about

A. Field strength

B. direction

C. Nature of charge

D. All of these

73 An object has mass and charge. It is moving in the direction of some field. Which type of field exerts a force on the object?

A. electric and magnetic fields only

B. magnetic and gravitational fields only

ELECTROSTATICS

C. electric and gravitational fields only

D. electric, magnetic and gravitational fields

74 Find the electric field strength required to hold suspended a particle of mass 10^{-6} kg and charge $1.0\mu\text{C}$ between two plates 10.0 cm apart.

A. 0.98 V/m

B. 980 V/m

C. 9.8 V/m

D. 98 V.m

75 If two point charges of charge q_1 and q_2 are placed at distance d . The force between them is proportional to:...

A. d

B. d^2

C. $1/d$

D. $1/d^2$

76 You have two identical capacitors. They can be connected in series or in parallel. If you want the smallest equivalent capacitance for the combination, how should you connect them?

A. in parallel

B. in series

C. either way because both combinations have the same capacitance

D. we can not determine, because presence of resistance in the circuit determines capacitance

77 Consider two capacitors with capacitance $2\mu\text{F}$ and $4\mu\text{F}$. With which type of connection will the $2\mu\text{F}$ capacitor have a greater amount of stored energy than the $4\mu\text{F}$ capacitor?

A. series

B. parallel

C. either series nor parallel

D. neither series nor parallel

78 Electric field lines due to a negative charge are:...

A. always horizontal

B. always vertical

C. radially towards the charge

D. radially away from the charge

79 The unit of electric flux density is

A. N/C

B. V/m

C. Nm

D. A and B

80 Electric field lines due to a negative charge are:...

A. always horizontal

B. always vertical

C. radially towards the charge

D. radially away from the charge

81 You have three capacitors, each of $2\mu\text{C}$. In which of the following combinations of the three capacitors, the resultant capacitance is $5\mu\text{C}$?

A. all three capacitors in series

B. two capacitors are in series, one in parallel

C. two capacitors are in parallel, one in series

D. all three capacitors in parallel

82 One coulomb charge is carried by:....

A. 6.25×10^{18}

B. one electron

C. one proton

D. 1.6×10^{19}

83 The electron volt is the unit of:....

A. electric current

B. electric potential

C. electric energy

D. electric flux

84 The electric field inside a spherical shell of uniform surface charge density is

A. Zero

B. Infinite

C. Constant less than zero

D. Directly proportional to distance

85 $E=F/q$ is the formula for?

A. Electrical field strength

B. Electrical field intensity

C. Both of them

D. None of them

86 The energy stored in a parallel plate capacitor is 24 J. What is the potential difference between the plates if the capacitance of the capacitor is $3\mu\text{F}$?

A. 4 kV

B. 16 kV

C. 54 kV

D. 8 kV

87 The electron volt is the unit of:....

ELECTROSTATICS

- A. electric current
- B. electric potential
- C. electric energy**
- D. electric flux

88 The electric field inside a spherical shell of uniform surface charge density is

- A. Zero**
- B. Infinite
- C. Constant less than zero
- D. Directly proportional to distance

89 Force acting on a positive charge is always:....

- A. in the direction opposite to electric field
- B. in the direction of electric field**
- C. in the direction perpendicular to electric field
- D. in the direction perpendicular to the velocity of charge

90 A capacitor can store its energy in its:....

- A. magnetic field
- B. parallel plate
- C. electric field**
- D. coil

91 Many computer keyboard buttons are constructed using capacitors. When a key is pushed down, the soft insulator between the movable plate and the fixed plate is compressed. When the key is pressed, what happens to the capacitance?

- A. it increases**
- B. it decreases
- C. it remains same
- D. it changes in a way you cannot determine because of the complex circuit

92 The value of permittivity of material, other than air or space is:...

- A. greater than unity**
- B. less than unity
- C. equal to unity
- D. zero

93 Three objects are brought close to one another, two at a time. When objects A and B are brought together, they attract. When objects B and C are brought together, they repel. Which of the following are necessarily true?

- A. objects A and C possess charges of the same sign
- B. objects A and C possess charges of opposite sign
- C. all three objects possess charges of the same sign
- D. additional experiments must be performed to determine information about the charges on the objects**

94 A charge is moving with velocity v , it enters a uniform magnetic field B . The direction of v is perpendicular to B . What is the path of the charge particle inside the magnetic field?

- A. parabolic
- B. circular**
- C. parallel to v
- D. parallel to E

95 The capacitance of a capacitor is a measure of its ability to:....

- A. store charge**
- B. store electric field
- C. gain potential difference
- D. store magnetic field

96 What is the change in kinetic energy of a proton when it is accelerated through a potential difference of 2MV?

- A. 0.32 μJ
- B. 0.32 nJ
- C. 0.32 pJ**
- D. 0.32 fJ

97 Which one is the correct statement about selenium?

- A. selenium is a good conductor
- B. selenium is a good insulator
- C. selenium is an insulator in the dark and becomes conductor when exposed to light**
- D. selenium is an conductor in the dark and becomes insulator when exposed to light

98 Three objects are brought close to each other, two at a time. When objects A and B are brought together, they repel. When objects B and C are brought together, they also repel. Which of the following are true?

- A. objects A and C possess charges of the same sign, but not B
- B. objects A and C possess charges of opposite sign

ELECTROSTATICS

C. all three objects possess charges of the same sign

D. one object is neutral

99 Electric potential energy per unit charge is:...

A. electric flux

B. electric field

C. electric potential

D. electric intensity

100 The greek word "xeros" and "graphos" means:...

A. sharp graphics

B. dry writing

C. wet writing

D. wet graphics

101 A test charge of $23 \mu\text{C}$ is at a point P where an external electric field is directed to the left and has a magnitude of $3.1 \times 10^6 \text{ N/C}$. If the test charge is replaced with another test charge of $13 \mu\text{C}$, what happens to the external electric field at P?

A. it remains same

B. it reverses direction

C. it changes in a way that cannot be determined

D. $3.1 \times 10^5 \text{ N/C}$

102 When a charge passes through a region undeflected then with $F_e = F_m$, _____

A. $B = 0$

B. $B \perp E$

C. both

D. none

103 Time constant is defined as the time required by the capacitor:...

A. to deposit 63% of the equilibrium charge

B. to deposit 36% of the equilibrium charge

C. to deposit 63 times of the equilibrium charge

D. to deposit 36 times of the equilibrium charge

104 Electric field lines

A. never cross each other

B. can cross each other

C. depends on shape of charge

D. Not enough information

105 The capacitance of parallel plate capacitor can be written as:...

A. $A \text{ ----- } d$

B. $A \epsilon \epsilon_0 \text{ ----- } d$

C. $A \epsilon \epsilon_0 \text{ ----- } 2d$

D. $A \epsilon \epsilon_0 \text{ ----- } d^2$

106 Electric field lines

A. never cross each other

B. can cross each other

C. depends on shape of charge

D. Not enough information

107 What voltage is required to store $7.2 \times 10^5 \text{ C}$ of charge on the plates of a $6.0 \mu\text{F}$ capacitor?

A. 12 V

B. 43.2 V

C. 1.2 V

D. 432 V

108 Static charge always creates

A. electric field and magnetic field

B. electromagnetic wave

C. electric field

D. Both a) and b)

109 The minimum indivisible unit of charge is:....

A. one coulomb

B. charge on one alpha particle

C. charge on one proton

D. one micro coulomb

110 Electrostatic force is

A. Nonconservative

B. Conservative

C. depends on shape of charge

D. None of these

111 Oil droplets of mass m and charge q are

dropped between two horizontal parallel plates.

Air resistance is negligible. The droplets are falling at constant velocity when electric field strength between the plates is E . Which of the following is true?

A. $E = 0$

B. $E < mg / q$

C. $E = mg / q$

D. $E > mg / q$

112 The SI unit of electric intensity is:...

A. volt / meter

B. newton / meter

C. tesla

ELECTROSTATICS

D. coulomb / meter

113 The coulomb constant is defined as:...

A. $1 / (4\pi\epsilon\epsilon)$

B. $4 / (\pi\epsilon\epsilon)$

C. $4\pi\epsilon\epsilon$

D. $\pi / (4\epsilon\epsilon)$

114 Negative of potential gradient is equal to:...

A. electricity intensity

B. electric flux

C. magnetic intensity

D. magnetic flux

115 Electric intensity at the centre of uniformly distributed charge is

A. Zero

B. Kq/r^2

C. q/r^2

D. q/ϵ_0

116 A positive point charge q_1 creates an electric field of magnitude E_1 at a spot located at a distance r_1 from the charge. The charge is replaced by another positive point charge q_2 , which creates a field of magnitude $E_2 = E_1$ at a distance of $r_2 = 2r_1$. How is q_1 related to q_2 ?

A. $q_2 = 4 q_1$

B. $q_2 = 2 q_1$

C. $q_2 = 0.5 q_1$

D. $q_2 = 0.25 q_1$

117 The presence of dielectric between two charged particles:....

A. reduces the electrostatic force

B. increases the electrostatic force

C. does not change electrostatic force

D. doubles the electrostatic force

118 The ratio: gravitational force -----
 -- is always:... electric force

A. greater than unity

B. less than unity

C. equal to unity

D. zero

119 The force between two charges Q and q , separated by a distance d is F . What will be the force between $4Q$ and $q/2$?

A. $2F$

B. $4F$

C. F

D. $F / 2$

120 What is the acceleration of an object having charge $2\mu C$ and mass $2 g$ moving through electric field strength $20 N/C$?

A. $4 cm/s^2$

B. $2 cm/s^2$

C. $40 cm/s^2$

D. $20 cm/s^2$

121 one of the following is a photoconductor?

A. silver

B. gold

C. selenium

D. mercury

122 A $18.0 V$ battery is connected to a capacitor, resulting in $27.0 \mu C$ of charge stored on the capacitor. How much energy is stored in the capacitor?

A. $2.43 \times 10^{-4} J$

B. $4.86 \times 10^{-4} J$

C. $2.43 \times 10^{-2} J$

D. $4.86 \times 10^{-2} J$

123 If the magnitude of charges on two point objects and the distance between them is doubled, then force will be:...

A. two times

B. four times

C. unchanged

D. halved

124 The number of electrons taken out from a body to produce 1 coulomb of charge will be

A. 6.25×10^{18}

B. 625×10^{18}

C. 6.023×10^{23}

D. None of these

125 The unit of electric field strength is:....

A. V / C

B. N / C

C. N / V

D. $N m$

126 Which of the following statements is correct?
 The electric field at a point is

ELECTROSTATICS

- A. continuous if there is a charge at that point
 B. Always continuous
 C. discontinuous only if there is a negative charge at that point
D. discontinuous if there is a charge at that point

127 Photocopier and ink-jet printer are application of:....

- A. electrostatics**
 B. magnetism
 C. thermal physics
 D. quantum physics

128 Coulomb's law is only applicable for

- A. big charges
 B. small charges
C. point charges
 D. any charges

129 An electron is held within electric field. What happens when electron is released?

- A. it moves in the direction of electric field
 B. it accelerates in the direction of electric field
 C. it moves in the direction opposite to electric field
D. it accelerates in the direction opposite to electric field

130 A capacitor of capacitance C is connected with resistance R . The time constant of the circuit would be:...

- A. RC**
 B. R/C
 C. e^{-RC}
 D. $R+C$

131 The minimum charge on an object can not be less than:

- A. $1.6 \times 10^{-19} \text{ C}$**
 B. $9 \times 10^9 \text{ C}$
 C. $9.1 \times 10^{-31} \text{ C}$
 D. $1.6 \times 10^{-27} \text{ C}$

132 A negative point charge is moving along a circular orbit around a positive point charge. Which aspect(s) of the electric force on the

negative point charge will remain constant as it moves?

- A. direction
B. magnitude
 C. both direction and magnitude
 D. neither direction and magnitude

133 The value of K depends upon

- A. charges
B. system of units and medium
 C. the distance between charges
 D. Nature of medium

134 Consider a capacitor has vacuum in the space between the conductors. If we double the amount of charge on each conductor, what happens to the capacitance?

- A. it increases
 B. it decreases
C. it remains same
 D. it depends on the size or shape of the conductors

135 Three charges $+3q$, $+q$ and Q are placed on a straight line with equal separation. In order to make the net force on q to be zero, the value of Q will be

- A. $3q$**
 B. $2q$
 C. $4q$
 D. $5q$

CURRENT ELECTRICITY

1 Which one of the following is a disadvantage of a potentiometer over a voltmeter ?

- A. it can measure the internal resistance of a cell
- B. it can measure the e.m.f. of a cell
- C. it is heavy and not portable**
- D. it can measure accurately very small PD. of the order of few microvolt

2 The resistance of a human body is about:

- A. 12 ohm
- B. 120 ohm
- C. 120K ohm**
- D. 120M ohm

3 The condition for the validity under Ohm's law is that

- A. Resistance must be uniform**
- B. Current should be proportional to the size of the resistance
- C. Resistance must be wire wound type
- D. Temperature at positive end should be more than the temperature at negative end

4 If a cell of emf 2V and internal resistance 0.5 ohm is connected across a resistance R, the current that flows is same as that when a cell of emf 1.5 V and internal resistance 0.3 ohm is connected across the same resistor. Then R= _____ Ohm.

- A. 0.3**
- B. 0.6
- C. 0.5
- D. 0.75

5 Which of the following statements is true?

- A. Power is proportional to voltage only
- B. Power is proportional to current only
- C. Power is neither proportional to voltage nor to the current
- D. Power is proportional to both the voltage and current**

6 The resistance of a conductor at absolute zero (0 K) is

- A. Almost zero**
- B. Almost infinite
- C. No prediction at all
- D. May increase or decrease

7 $1/R_{eq} = 1/R_1 + 1/R_2 + 1/R_3 + \dots + 1/R_n$ is the combination in

- A. Series
- B. Parallel**
- C. Both of them
- D. None of them

8 Which of the following has a negative temperature coefficient of resistance ?

- A. Tungsten
- B. Carbon**
- C. Nichrome
- D. Platinum

9 Calculate the time taken for the charges to complete the circuit if the total charges were 5000 Coulomb and the current of the circuit was 20 Amp?

- A. 250 seconds**
- B. 350 seconds
- C. 400 seconds
- D. 500 seconds

10 In order to achieve high accuracy, the slide wire of a potentiometer should be

- A. As long as possible**
- B. As short as possible
- C. Neither too small nor too large
- D. Very thick

11 In a conductor, if 6-coulomb charge flows for 2 seconds. The value of electric current will be

- A. 3 ampere**
- B. 3 volts
- C. 2 amperes
- D. 2 volts

12 What is the SI Unit of Potential difference?

- A. Volts**
- B. Coulomb
- C. Meter
- D. newton's

13 Correct form of ohm's law

- A. $I = VR$
- B. $V \propto I$
- C. $V = IR$
- D. Both B and C**

CURRENT ELECTRICITY

14 Two copper conductors have equal length. The cross-sectional area of one conductor is four times that of the other. If the conductor having smaller cross-sectional area has a resistance of 40 ohms the resistance of other conductor will be

- A. 160 ohm
- B. 80 ohm
- C. 20 ohm
- D. 10 ohm**

15 Electric current may be defined as

- A. Rate of flow of charge**
- B. Rate of flow of momentum
- C. Rate of flow of power
- D. None of them

16 Value of current in a short circuit is _____

- A. Infinite**
- B. zero
- C. minimum
- D. maximum

17 Electric power is

- A. rate of electric work done per unit time**
- B. voltage per unit time
- C. electric charge per unit time
- D. current per unit time

18 The temperature coefficient of resistance is expressed in :

- A. $^{\circ}\text{C}$
- B. $^{\circ}\text{C}^{-1}$**
- C. $\text{m}^{\circ}\text{C}^{-1}$
- D. None of these

19 Formula for Power is

- A. $P=IV$**
- B. $P=V/I$
- C. $p=V+I$
- D. $p=VQ$

20 Four 100 W bulbs are connected in parallel across 200 V supply line. If one bulb gets fused

- A. No bulb will light
- B. All the four bulbs will light
- C. Rest of three bulbs will light**
- D. Above B and C

21 The current passing through a resistor in a circuit is 1 A when the voltage across the same resistor is 10 V. What is the value of current when the voltage across the resistor is 8 V?

- A. 0.8A**
- B. 8A
- C. 80A
- D. 18A

22 As compared to thin wires, thick wires have

- A. more resistance
- B. no resistance
- C. less resistance**
- D. same resistance

23 Two wires of copper are of the same length but have different diameters. When they are connected in series across a battery, the heat generated is H_1 . When connected in parallel across the same battery, the heat generated during the same time is H_2 . Then :

- A. $H_1 = H_2$
- B. $H_1 < H_2$**
- C. $H_1 > H_2$
- D. $H_1 > H_2$

24 A wire has a resistance of 5.5Ω at 19°C and 21.5Ω at 200°C . Find the temperature coefficient of resistivity (α) of the material.

- A. 0.016 per degree celsius**
- B. 32 per degree celsius
- C. 0.018 per degree celsius
- D. 0.00106 per degree Celsius

25 Ohm's Law is applicable only when temperature remains

- A. changing
- B. absolute zero
- C. constant**
- D. None of these

26 Ohm's law is valid when the temperature of conductor is :

- A. very low
- B. very high
- C. varying**
- D. constant**

27 Terminal potential difference of a cell

- A. increases with increase in its internal resistance
- B. decrease with increase in internal resistance**
- C. is independent of its internal resistance
- D. None of these

28 Resistivity of a wire is ____ ohm-m if 0.75 A current flows through it by applying 1.5 V potential difference, take length and cross section as 5m and $2.5 \times 10^{-7} \text{ m}^2$.

- A. 1×10^{-7}**
- B. 2.63×10^{-8}
- C. 19×10^{-8}
- D. 7.85×10^{-8}

CURRENT ELECTRICITY

29 Two wires of copper are of the same length but have different diameters. When they are connected in series across a battery, the heat generated is H_1 . When connected in parallel across the same battery, the heat generated during the same time is H_2 . Then :

- A. $H_1 = H_2$
- B. $H_1 < H_2$**
- C. $H_1 > H_2$
- D. $H_1 > H_2$

30 Resistivity of a wire is ____ ohm-m if 0.75 A current flows through it by applying 1.5 V potential difference, take length and cross section as 5m and $2.5 \times 10^{-7} \text{ m}^2$.

- A. 1×10^{-7}**
- B. 2.63×10^{-8}
- C. 19×10^{-8}
- D. 7.85×10^{-8}

31 What is the relationship between Power, Current and voltage

- A. $P = V/I$
- B. $P = VI$**
- C. $2P = I + V$
- D. All of them

32 In parallel voltage remains?

- A. Same**
- B. Different
- C. Both of them
- D. None of them

33 The specific resistance of a conductor increases with :

- A. increase in temperature**
- B. increase in cross-sectional area
- C. decrease in length
- D. decrease in cross-sectional area

34 Reciprocal of resistivity is called

- A. Resistance
- B. Inductance
- C. Conductivity**
- D. Flexibility

35 If a current of 5 Amperes flows through the conductor. The number of electrons per second will is

- A. 1.6×10^{-19}
- B. 3.12×10^{19}**
- C. 4×10^{19}
- D. 7.68×10^{20}

36 Resistance of a conductor depends upon

- A. temperature
- B. nature of a conductor
- C. length**
- D. None of these

37 Electric current may be defined as

- A. Rate of flow of charge**
- B. Rate of flow of momentum
- C. Rate of flow of power
- D. None of them

38 Find the resistance if voltage of the circuit is 45 volts and current 30 Amp?

- A. 1.6 ohm
- B. 1.5 ohm**
- C. 1.7 ohm
- D. 1.8 ohm

39 A 250V bulb passes a current of 0.3A. Calculate the power in the lamp.

- A. 50W
- B. 75W**
- C. 100W
- D. 90W

40 If the length of a potentiometer wire is doubled, the accuracy in determining the null point _____

- A. is increased**
- B. is decreased
- C. remains constant
- D. may increase or decrease

41 The sensitivity of a potentiometer can be increased by _____

- A. increasing the e.m.f. of the primary cell
- B. increasing the potential gradient
- C. increasing the length of the potentiometer wire**
- D. decreasing the length of the potentiometer wire

42 Reciprocal of resistivity is called

- A. Resistance



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CURRENT ELECTRICITY

- B. Inductance
- C. Conductivity**
- D. Flexibility

43 What is the power of a bulb if it is operated at 220V and the current in the circuit is 1.5 Amp

- A. 330 watt**
- B. 430 watt
- C. 530 watt
- D. 500 watt

44 An apparatus which is used to measure current voltage and resistance

- A. Multimeter**
- B. Ammeter
- C. Galvanometer
- D. Voltmeter

45 Copper wire is used as connecting wire because :

- A. copper has high electrical resistivity
- B. copper has low electrical resistivity**
- C. copper has low electrical conductivity
- D. copper has high value of elasticity

46 $R_{eq} = R_1 + R_2 + R_3 + \dots + R_n$ is the combination in

- A. Series**
- B. Parallel
- C. Both of them
- D. None of them

47 wire of uniform area of cross-section A and length L is cut into two equal parts, the resistivity of each part is

- A. Doubled
- B. Half
- C. Remains the same**
- D. increase three times

48 microvolt is

- A. 1×10^{-3} V
- B. 1×10^{-4} V
- C. 1×10^{-5} V
- D. 1×10^{-6} V**

49 Which of the following is not unit of power

- A. horse power
- B. kilowatt
- C. kWh**

D. Nm/s

50 1 Watt =

- A. 1 VA**
- B. 1V/A
- C. 1A/V
- D. 1/AV

51 Resistivity of a wire is ___ ohm-m if 0.75 A current flows through it by applying 1.5 V potential difference, take length and cross section as 5m and $2.5 \times 10^{-7} \text{ m}^2$.

- A. 1×10^{-7}**
- B. 2.63×10^{-8}
- C. 19×10^{-8}
- D. 7.85×10^{-8}

52 The current passing through a conductor is directly proportional to the potential difference applied across its terminals, provided the temperature and other physical conditions of the conductor does not change

- A. Gauss's law
- B. Lenz law
- C. Pascal's law
- D. Ohm's law**

53 A current of 5A flows in a resistor of 2 ohms. Calculate the energy dissipated in 300 seconds in the resistor.

- A. 5KJ
- B. 10KJ
- C. 15KJ**
- D. 20 KJ

54 The length of a conductor is halved. Its resistance will be :

- A. halved**
- B. doubled
- C. unchanged
- D. quadrupled

55 An electric filament bulb can be worked from

- A. D.C. supply only
- B. A.C. supply only
- C. Battery supply only
- D. All above**

56 Maximum power is delivered when internal resistance of the source equals

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CURRENT ELECTRICITY

- A. zero resistance
- B. load resistance**
- C. max resistance
- D. None of these

57 The length and radius of an electric resistance of a certain wire are doubled simultaneously, then the:

- A. resistance will be doubled and specific resistance will be halved
- B. resistance will be halved and specific resistance will remain unchanged**
- C. resistance will be halved and the specific resistance will be doubled
- D. resistance and specific resistance will both remain unchanged

58 Calculate the charge passing through the circuit if it's current is 10 Amp and the recorded time is 15 seconds

- A. 1500 Coulomb
- B. 150 Coulomb**
- C. 13400 Coulomb
- D. 140 Coulomb

59 Ohm's law is valid at _____ temperatures

- A. Constant**
- B. Varying
- C. All of them
- D. None of them

60 If the conductor resistance is 50 ohm and the current passing through it is 5 A. What is the value of potential difference?

- A. 150V
- B. 250V**
- C. 50V
- D. 15V

61 As compared to thin wires, thick wires have

- A. more resistance
- B. no resistance
- C. less resistance**
- D. same resistance

62 circuit in series deliberately?

- A. To increase current
- B. To decrease current**
- C. To control current
- D. Just to give a good look to the circuit

63 Electric power is

- A. rate of electric work done per unit time**
- B. voltage per unit time
- C. electric charge per unit time
- D. current per unit time

64 To measure an A.C. voltage by using an A.C. potentiometer, it is desirable that the supply for the potentiometer is taken

- A. From a source which is not the same as the unknown voltage
- B. From a battery
- C. From the same source as the unknown voltage**
- D. Any of the above

65 Mathematical form of ohm's law is _____

- A. $I = VR$
- B. $R = VI$
- C. $I = R/V$
- D. $I = V/R$**

66 PD stands for

- A. Potential difference**
- B. Potential deviation
- C. Power difference
- D. Power dissipated

67 A 200 watt bulb operates in a 220V circuit. Find the current.

- A. 0.9 Amp**
- B. 0.6 Amp
- C. 2 Amp
- D. 3 Amp

68 Ohm's Law is applicable only when temperature remains

- A. changing
- B. absolute zero
- C. constant**
- D. None of these

69 Formula for Power is

- A. $P = IV$**
- B. $P = V/I$
- C. $p = V + I$
- D. $p = VQ$

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CURRENT ELECTRICITY

70 In a lamp load when more than one lamp are switched on the total resistance of the load

- A. Increases
- B. Decreases**
- C. Remains same
- D. None of the above

71 Which of the following is not unit of power

- A. horse power
- B. kilowatt
- C. kWh**
- D. Nm s

72 Internal resistance of a battery is _____ ohm, if, $E=10V$, $V_t=9V$, $I=1A$

- A. 1**
- B. 0.1
- C. 0.01
- D. None of these

73 Maximum power delivered by battery is

- A. $P_{max} = E^2/4r$**
- B. $P_{max} = 4rE^2$
- C. $P_{max} = VIT$
- D. Unlimited

74 To measure an A.C. voltage by using an A.C. potentiometer, it is desirable that the supply for the potentiometer is taken

- A. From a source which is not the same as the unknown voltage
- B. From a battery
- C. From the same source as the unknown voltage**
- D. Any of the above

75 SI unit of resistivity is

- A. ohm
- B. ohm meter**
- C. ohm meter
- D. meter/ohm

76 Four wires of same material, the same cross-sectional area and the same length when connected in parallel give a resistance of 0.25 ohms. If the same four wires are connected in series the effective resistance will be

- A. 1 ohm
- B. 2 ohm
- C. 3 ohm

D. 4 ohm

77 A fuse is placed in series with the circuit to protect against

- A. High power
- B. High voltage
- C. High current**
- D. Over heating**

78 Electric current may be defined as

- A. Rate of flow of charge**
- B. Rate of flow of momentum
- C. Rate of flow of power
- D. None of them

79 SI Unit of voltage is?

- A. Coulomb
- B. Volts**
- C. Ampere
- D. newton's Meter

80 An apparatus which is used to measure current voltage and resistance

- A. Multimeter**
- B. Ammeter
- C. Galvanometer
- D. Voltmeter

81 Resistivity of a conductor depends upon

- A. temperature**
- B. length
- C. cross sectional area
- D. None of these

82 How much potential difference is required for establishing steady current?

- A. Minimum
- B. Constant**
- C. Maximum
- D. Varying

83 If I , R and t are the current, resistance and time respectively, then according to Joule's law heat produced will be proportional to

- A. I^2Rt**
- B. I^2Rf
- C. I^2R2t
- D. I^2R2t^2

CURRENT ELECTRICITY

84 If a cell of emf 2V and internal resistance 0.5 ohm is connected across a resistance R, the current that flows is same as that when a cell of emf 1.5 V and internal resistance 0.3 ohm is connected across the same resistor. Then $R =$ _____ Ohm.

A. 0.3

B. 0.6

C. 0.5

D. 0.75

85 Volts / Ampere = _____

A. Ohm

B. Ohm meter

C. Pascal

D. None of them

86 An electrical instrument which is used to measure current passing through a circuit is called?

A. Ammeter

B. Voltmeter

C. Galvanometer

D. Avometer

87 Copper wire is used as connecting wire because :

A. copper has high electrical resistivity

B. copper has low electrical resistivity

C. copper has low electrical conductivity

D. copper has high value of elasticity

88 A wire has a resistance of 5.5Ω at 19°C and 21.5Ω at 200°C . Find the temperature coefficient of resistivity (α) of the material.

A. 0.016 per degree celsius

B. 32 per degree celsius

C. 0.018 per degree celsius

D. 0.00106 per degree Celsius

89 A resistance of 40 Ohms is attached to a circuit having current of 300 Amp. Find its voltage.

A. 12000 volts

B. 15000 volts

C. 20000 volts

D. 300 volts

90 Coulomb per second is equivalent to

A. Ampere

B. Farad

C. Henry

D. Watt

91 The current passing through a conductor is directly proportional to the potential difference applied across its terminals, provided the temperature and other physical conditions of the conductor does not change

A. Gauss's law

B. Lenz law

C. Pascal's law

D. Ohm's law

92 $1/C_{\text{equ}} = 1/C_1 + 1/C_2 + 1/C_3 + \dots + 1/C_n$ is the combination in

A. Series

B. Parallel

C. Both of them

D. None of them

93 Specific resistance of all metals is mostly affected by

A. temperature

B. pressure

C. magnetic field

D. volume

94 Internal resistance is the resistance offered by

A. Source of emf

B. Conductor

C. Resistor

D. Capacitor

95 The resistance and length of wire are

A. inversely related

B. directly related

C. not related

D. inversely proportional

96 Calculate the charge passing through the circuit if it's current is 10 Amp and the recorded time is 15 seconds

A. 1500 Coulomb

B. 150 Coulomb

C. 13400 Coulomb

D. 140 Coulomb

97 Value of current in a short circuit is _____

A. **Infinite**

B. zero

C. minimum

D. maximum



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98 Find the current if power given is 5 Watts and voltage is 0.5 volts.

- A. 10 Amp
- B. 20 Amp
- C. 30 Amp
- D. 50 Amp

99 What is the relationship between Power, Current and Resistance

- A. $P = I^2 R$
- B. $P = I^2 R / 2$
- C. $P = IR$
- D. All of them

100 The length of a conductor is halved. Its resistance will be :

- A. halved
- B. doubled
- C. unchanged
- D. quadrupled

101 Choose the wrong statement from the following:
For accurate measurements, a potentiometer wire

- A. must have a uniform cross section
- B. must have a high temperature coefficient of resistance
- C. high specific resistance
- D. homogeneity

102 The resistance of a superconductor is

- A. Finite
- B. Infinite
- C. Zero
- D. Changes with every conductor

103 The overvoltage surges in power systems may be caused by

- A. Lightning
- B. Resonance
- C. Switching
- D. All of the above

104 What is the power of a bulb if it is operated at 220V and the current in the circuit is 1.5 Amp

- A. 330 watt
- B. 430 watt
- C. 530 watt
- D. 500 watt

105 Resistivity of a substance is defined as the resistance of a _____ of that substance.

- A. meter
- B. meter square
- C. meter cube
- D. centimeter

106 In parallel voltage remains?

- A. Same
- B. Different
- C. Both of them
- D. None of them

107 The four bulbs of 40 W each are connected in series with a battery across them. Which of the following statement is true?

- A. The current through each bulb is same
- B. The voltage across each bulb is not same
- C. The power dissipation in each bulb is not same
- D. None of the above

108 The graphical representation of Ohm's law is

- A. Hyperbola
- B. Ellipse
- C. Parabola
- D. Straight line

109 The specific resistance of a rod of copper as compared to that of thin wire of copper is :

- A. less
- B. more
- C. same
- D. depends upon the length and area of cross-section of the wire

110 Find the resistance if voltage of the circuit is 45 volts and current 30 Amp?

- A. 1.6 ohm
- B. 1.5 ohm
- C. 1.7 ohm
- D. 1.8 ohm

111 The specific resistance of a rod of copper as compared to that of thin wire of copper is :

- A. less
- B. more
- C. same
- D. depends upon the length and area of cross-section of the wire

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112 Electrical power is given by $P =$

- A. VI
- B. $I^2 R$
- C. V^2 / R
- D. All**

113 An EMF source of 8.0 V is connected to a purely resistive electrical appliance. An electric current of 2.0 A flows through it. What is the resistance offered by the electrical appliances?

- A. 4 ohm**
- B. 6 ohm
- C. 2 ohm
- D. 3 ohm

114 Which equation represents the maximum output power

- A. $P = VI$
- B. $P = I^2 R$
- C. $P = V^2 / R$
- D. all of these**

115 Which of the following can have negative temperature coefficient?

- A. Compounds of silver
- B. Liquid metals
- C. Metallic alloys
- D. Electrolytes**

116 Steady current does not change with respect to

- A. conductor
- B. source
- C. time**
- D. potential difference

117 Two wires of copper are of the same length but have different diameters. When they are connected in series across a battery, the heat generated is H_1 . When connected in parallel across the same battery, the heat generated during the same time is H_2 . Then :

- A. $H_1 = H_2$
- B. $H_1 < H_2$**
- C. $H_1 > H_2$
- D. $H_1 > H_2$

118 Steady current does not change with respect to

- A. conductor
- B. source
- C. time**
- D. potential difference

119 _____ is a source of electrical energy having fixed polarity and terminals

- A. Motor
- B. Metals
- C. Battery**
- D. Generator

120 Why should a resistance be introduced in a circuit in series deliberately?

- A. To increase current
- B. To decrease current**
- C. To control current
- D. Just to give a good look to the circuit

121 There are three bulbs of 60W 100W and 200W. Which bulb has the thickest filament?

- 1. 100W
- 2. 200W**
- 3. 60W
- 4. All

122 Galvanometer is an

- A. Electromechanical device**
- B. Electrosolar device
- C. Electrothermal device
- D. None of them

123 4000 Coulomb charges were passing from the wire for about 12 seconds. Estimate the current during this process?

- A. 333.3 ampere**
- B. 333.33 volts
- C. 666.67 ampere
- D. None of them

124 Why should a resistance be introduced in a circuit in series deliberately?

- A. To increase current
- B. To decrease current**
- C. To control current
- D. Just to give a good look to the circuit

125 $C_{eq} = C_1 + C_2 + C_3 + \dots + C_n$ is the combination in

- A. Parallel**
- B. Series
- C. Both of them
- D. None of them

126 If a certain piece of copper is to be shaped into a conductor of minimum resistance, its length (L) and cross-sectional area (a) shall respectively be

- A. L, 2A
- B. $L/2$, 2A**
- C. 2L, 2A



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D. $2L, A/2$

127 An immersion heater of 400 watts kept on for 5 hours will consume electrical power of

- A. 2KWh
- B. 20KWh
- C. 6KWh
- D. 12KWh

128 If the length of a potentiometer wire is doubled, the accuracy in determining the null point _____

- A. is increased
- B. is decreased
- C. remains constant
- D. may increase or decrease

129 Resistivity of a wire is ____ ohm-m if 0.75 A current flows through it by applying 1.5 V potential difference, take length and cross section as 5m and $2.5 \times 10^{-7} \text{ m}^2$.

- A. 1×10^{-7}
- B. 2.63×10^{-8}
- C. 19×10^{-8}
- D. 7.85×10^{-8}

130 Calculate the work done in a resistor of 20 ohm carrying 5A of current in 3 hours.

- A. 1KWh
- B. 1.5KWh
- C. 2KWh
- D. 3KWh

131 A potentiometer is used to measure the emf of a cell. At null point, no current flows through _____

- A. the main circuit
- B. the cell circuit
- C. both the main and cell circuits
- D. the potentiometer wire

132 The battery of a pocket calculator supplies 0.35A at a potential difference of 6 volts. What is the power of the calculator?

- A. 9 Watt
- B. 2.1 Watt
- C. 4 Watt

133 A 200 watt bulb operates in a 220V circuit. Find the current.

- A. 0.9 Amp
- B. 0.6 Amp
- C. 2 Amp
- D. 3 Amp

134 Calculate the time taken for the charges to complete the circuit if the total charges were 5000 Coulomb and the current of the circuit was 20 Amp?

- A. 250 seconds

B. 350 seconds

C. 400 seconds

D. 500 seconds

135 SI Unit of current is ?

- A. Ampere
- B. Volt
- C. Joules
- D. Watt

136 Our system stability is least affected by

- A. Reactance of generator
- B. Input torque
- C. Losses
- D. Reactants of transmission line

137 Maximum power is delivered when internal resistance of the source equals

- A. zero resistance
- B. load resistance
- C. max resistance
- D. None of these

138 Electric current may be defined as

- A. Rate of flow of charge
- B. Rate of flow of momentum
- C. Rate of flow of power
- D. None of them

139 The SI Unit of electric charge is?

- A. Coulomb
- B. Ampere
- C. Hertz
- D. Volt

140 Which of the following statements is true?

- A. Power is proportional to voltage only
- B. Power is proportional to current only
- C. Power is neither proportional to voltage nor to the current

D. Power is proportional to both the voltage and current

141 An example of non-ohmic resistor is

- A. Diode
- B. Tungsten wire
- C. Carbon resistance
- D. Copper wire

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142 A current of 16 amperes divides between two branches in parallel of resistances 8 ohms and 12 ohms respectively. The current in each branch is

- A. 6.4 A, 6.9 A
- B. 6.4 A, 9.6 A**
- C. 4.6 A, 6.9 A
- D. 4.6 A, 9.6 A

143 Mathematical form of ohm's law is _____

- A. $I=VR$
- B. $R=VI$
- C. $I=R/V$
- D. $I=V/R$**

144 The heat sensitive device whose resistivity changes very rapidly with change of temperature is called a :

- A. resistor
- B. super-conductor
- C. thermocouple
- D. thermistor**

145 A resistance of 40 Ohms is attached to a circuit having current of 300 Amp, Find its voltage.

- A. 12000 volts**
- B. 15000 volts
- C. 20000 volts
- D. 300 volts

146 Electric current may be defined as

- A. Rate of flow of charge**
- B. Rate of flow of momentum
- C. Rate of flow of power
- D. None of them

147 A wire of uniform area of cross-section A and length L is cut into two equal parts, the resistivity of each part is

- A. Doubled
- B. Half
- C. Remains the same**
- D. increase three times

148 All of the following are equivalent to watt except

- A. (Amperes)² ohm
- B. Joules/sec
- C. Amperes \times volts
- D. Amperes/volt**

149 Electrical power of a battery is defined as the rate of

- A. electrical energy consumed by the battery
- B. Electrical energy transferred by the battery
- C. both**
- D. none of these

150 If 1 ampere current flows through 2m long conductor the charge flow through it in 1 hour will be

- A. 3600C**
- B. 7200C
- C. 1C
- D. 2C

151 Electric current may be defined as

- A. Rate of flow of charge**
- B. Rate of flow of momentum
- C. Rate of flow of power
- D. None of them

152 A current of 5A flows in a resistor of 2 ohms. Calculate the energy dissipated in 300 seconds in the resistor.

- A. 5KJ
- B. 10KJ
- C. 15KJ**
- D. 20 KJ

153 In series circuit, current remains?

- A. Same**
- B. Different
- C. Sometimes same sometimes different
- D. None of them

154 Materials that have both metallic and non-metallic characteristics are called

- A. Semiconductor**
- B. Metal
- C. Non metal
- D. Organic compound

155 PD stands for

- A. Potential difference**
- B. Potential deviation
- C. Power difference
- D. Power dissipated

156 Resistance of a material always decreases if

- A. Temperature of material is decreased
- B. Temperature of material is increased
- C. Number of free electrons available becomes more**
- D. None of the above is correct

CURRENT ELECTRICITY

157 Steady current does not change with respect to _____.

- A. conductor
- B. source
- C. time**
- D. potential difference

158 Electric power is

- A. rate of electric work done per unit time**
- B. voltage per unit time
- C. electric charge per unit time
- D. current per unit time

159 Two incandescent light bulbs of 40 W and 60 W ratings are connected in series across the mains. Then

- A. The bulbs together consume 100 W
- B. The bulbs together consume 50 W
- C. The 60 W bulb glows brighter
- D. The 40 W bulb glows brighter**

160 A 250V bulb passes a current of 0.3A. Calculate the power in the lamp.

- A. 50W
- B. 75W**
- C. 100W
- D. 90W

161 A light bulb draws 300 mA when the voltage across it is 240 V. The resistance of the light bulb is

- A. 400 ohm
- B. 600 ohm
- C. 800 ohm**
- D. 1000 ohm

162 Emf becomes equal to terminal potential difference when

- A. circuit is closed
- B. current is max
- C. circuit is open**
- D. all of these

163 Sensitivity of a galvanometer is defined as

- A. The deflection produced per unit micro ampere current**
- B. The deflection per force
- C. Force per unit area
- D. None of them

164 The length and radius of an electric resistance of a certain wire are doubled simultaneously, then the:

- A. resistance will be doubled and specific resistance will be halved
- B. resistance will be halved and specific resistance will remain unchanged**
- C. resistance will be halved and the specific resistance will be doubled
- D. resistance and specific resistance will both remain unchanged

165 In order to achieve high accuracy, the slide wire of a potentiometer should be

- A. As long as possible**
- B. As short as possible
- C. Neither too small not too large
- D. Very thick

166 Basically a potentiometer is a device for

- A. Comparing two voltages**
- B. Measuring a current
- C. Comparing two currents
- D. Measuring a voltage

167 An electric iron is marked 20 volts 500W. The units consumed by it in using it for 24 hours will be

- A. 12**
- B. 24
- C. 5
- D. 1100

168 A potential difference of 10 V is applied across a conductor whose resistance is 2.5 ohm. What is the value of current flowing through it?

- A. 4A**
- B. 2A
- C. 6A
- D. 10A

169 The circuit which gives continuously varying potential is called

- A. Complex network
- B. Wheatstone bridge
- C. Potential divider**
- D. All of above

170 The resistance of a wire on increasing its temperature will



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A. Increase with a rise in temperature

- B. Decrease with a rise in temperature
- C. Will remain the same
- D. Depends upon the altitude of experimentation

171 Internal resistance of a battery is _____ ohm, if, $E=10V$, $V_t=9V$, $I=1A$

- A. 1**
- B. 0.1
- C. 0.01
- D. None of these

172 _____ relationship exists between current and voltage in terms of Ohm's law

- A. Non linear
- B. Varying
- C. Linear**
- D. None of them

173 A neon flashlight cell with an emf of 1.5V gives a current of 15A when connected directly to an ammeter of resistance 0.04Ω . The internal resistance of the cell is

- A. 0.0004Ω
- B. 0.06Ω**
- C. 0.10Ω

174 When bulb is turned on, ohm's law is applicable

- A. Yes
- B. No**
- C. partly
- D. None of these

175 In an A.C. coordinate potentiometer, the currents in the phase and quadrature potentiometer are adjusted to be

- A. Out of phase by 90°**
- B. Out of phase by 60°
- C. Out of phase by 30°
- D. Out of phase by 0°

176 What is the power of a bulb if it is operated at 220V and the current in the circuit is 1.5 Amp

- A. 330 watt**
- B. 430 watt
- C. 530 watt
- D. 500 watt

177 Steady current does not change with respect to

- A. conductor
- B. source

C. time

D. potential difference

178 EMF stands for

- A. Electromotive force**
- B. Electrical momentum force
- C. Electric Magnetic force
- D. None of them

179 1 Watt =

- A. 1 VA**
- B. 1V/A
- C. 1A/V
- D. 1/AV

180 Calculate the charge passing through the circuit if its current is 10 Amp and the recorded time is 15 seconds

- A. 1500 Coulomb
- B. 150 Coulomb**
- C. 13400 Coulomb
- D. 140 Coulomb

181 Two wires of copper are of the same length but have different diameters. When they are connected in series across a battery, the heat generated is H_1 . When connected in parallel across the same battery, the heat generated during the same time is H_2 . Then :

- A. $H_1 = H_2$
- B. $H_1 < H_2$**
- C. $H_1 > H_2$
- D. $H_1 > H_2$

182 An electrical instrument which is used to measure potential difference between two points is called

- A. Barometer
- B. Manometer
- C. Galvanometer
- D. Voltmeter**

183 When the length of the conductor is doubled and the area of cross-section remains the same then its resistance

- A. Remains the same
- B. Will be doubled**
- C. Will become half
- D. Will increase by four times

184 1 kilo ohm = _____ ohm

- A. 10^3 ohm**

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- B. 10^2 ohm
C. 10^4 ohm
D. None of them

185 An electric filament bulb can be worked from

- A. D.C. supply only
B. A.C. supply only
C. Battery supply only
D. All above

186 1 microvolt is

- A. 1×10^{-3} V
B. 1×10^{-4} V
C. 1×10^{-5} V
D. 1×10^{-6} V

187 Maximum power delivered by battery is

- A. $P_{\max} = E^2/4r$
B. $P_{\max} = 4rE^2$
C. $P_{\max} = VIT$
D. Unlimited

188 A wire has a resistance of 5.5Ω at 19°C and 21.5Ω at 200°C . Find the temperature coefficient of resistivity (α) of the material.

- A. 0.016 per degree celsius
B. 32 per degree celsius
C. 0.018 per degree celsius
D. 0.00106 per degree Celsius

189 Watt-hour measures _____

- A. current
B. electrical energy
C. power
D. voltage

190 Ohm's law is valid at _____ temperatures

- A. Constant
B. Varying
C. All of them
D. None of them

191 When 2Ω , 4Ω and 6Ω resistors are connected in parallel their resultant equivalent resistance will be

- A. 12Ω
B. $11/12\Omega$
C. $12/11\Omega$
D. Data is insufficient

192 If 1 ampere current will flow in 5m conductor for 1 hour the charge flow will be

- A. 5C
B. 18000C
C. 1C
D. 3600C

193 4000 Coulomb charges were passing from the wire for about 12 seconds. Estimate the current during this process?

- A. 333.3 ampere
B. 333.33 volts
C. 666.67 ampere
D. None of them

194 What is the relationship between Power, Current and voltage

- A. $P = V/I$
B. $P = VI$
C. $2P = I + V$
D. All of them

195 Ohm's law is true for

- A. Metallic conductors at low temperature
B. Metallic conductors at high temperature
C. For electrolytes, when current passes through them
D. For diode when current flows

196 The hot resistance of the bulb's filament is higher than its cold resistance because the temperature coefficient of the filament is

- A. Zero
B. Negative
C. Positive
D. About 2 ohms per degree

197 Resistivity of a wire is ____ ohm-m if 0.75 A current flows through it by applying 1.5 V potential difference, take length and cross section as 5m and $2.5 \times 10^{-7} \text{ m}^2$.

- A. 1×10^{-7}
B. 2.63×10^{-8}
C. 19×10^{-8}
D. 7.85×10^{-8}

198 The SI Unit for resistance is?

- A. Ohm
B. Ampere
C. Watt
D. Volts

199 Resistance of carbon filament lamp _____ as the applied voltage increases.

- A. Increases

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B. Decreases

- C. Remains same
 D. None of the above

200 Which one of the following does not have negative temperature coefficient?

A. Aluminium

- B. Paper
 C. Rubber
 D. Mica

201 If a cell of emf 2V and internal resistance 0.5 ohm is connected across a resistance R, the current that flows is same as that when a cell of emf 1.5 V and internal resistance 0.3 ohm is connected across the same resistor. Then R= _____ Ohm.

A. 0.3

- B. 0.6
 C. 0.5
 D. 0.75

202 Resistivity of a wire is ___ ohm-m if 0.75 A current flows through it by applying 1.5 V potential difference, take length and cross section as 5m and $2.5 \times 10^{-7} \text{ m}^2$.

A. 1×10^{-7}

- B. 2.63×10^{-8}
 C. 19×10^{-8}
 D. 7.85×10^{-8}

203 If the conductor resistance is 50 ohm and the current passing through it is 5 A. What is the value of potential difference?

A. 150V

B. 250V

- C. 50V
 D. 15V

204 Ohm's law is applicable to

- A. Semiconductors
 B. Vacuum tubes
 C. Carbon resistors

D. None of these

205 $R_{eq} = R_1 + R_2 + R_3 + \dots + R_n$ is the combination in

A. Series

- B. Parallel
 C. Both of them

D. None of them

206 International ohm is defined in terms of the resistance of

A. A column of mercury

- B. A cube of carbon
 C. A cube of copper
 D. The unit length of wire

207 The length and radius of an electric resistance of a certain wire are doubled simultaneously, then the:

A. resistance will be doubled and specific resistance will be halved

B. resistance will be halved and specific resistance will remain unchanged

- C. resistance will be halved and the specific resistance will be doubled
 D. resistance and specific resistance will both remain unchanged

208 Calculate the time taken for the charges to complete the circuit if the total charges were 5000 Coulomb and the current of the circuit was 20 Amp?

A. 250 seconds

- B. 350 seconds
 C. 400 seconds
 D. 500 seconds

209 Kilowatt-hour(kWh) is a unit of?

A. Power

B. Energy

- C. current
 D. resistance

210 Which one of the following is a disadvantage of a potentiometer over a voltmeter ?

- A. it can measure the internal resistance of a cell
 B. it can measure the e.m.f. of a cell

C. it is heavy and not portable

- D. it can measure accurately very small PD. of the order of few microvolt

211 The resistance of a human body is about:

- A. 12 ohm
 B. 120 ohm
C. 120K ohm
 D. 120M ohm

CURRENT ELECTRICITY

212 The condition for the validity under Ohm's law is that

A. Resistance must be uniform

B. Current should be proportional to the size of the resistance

C. Resistance must be wire wound type

D. Temperature at positive end should be more than the temperature at negative end

213 If a cell of emf 2V and internal resistance 0.5 ohm is connected across a resistance R, the current that flows is same as that when a cell of emf 1.5 V and internal resistance 0.3 ohm is connected across the same resistor. Then R= _____ Ohm.

A. 0.3

B. 0.6

C. 0.5

D. 0.75

214 Which of the following statements is true?

A. Power is proportional to voltage only

B. Power is proportional to current only

C. Power is neither proportional to voltage nor to the current

D. Power is proportional to both the voltage and current

215 The resistance of a conductor at absolute zero (0 K) is

A. Almost zero

B. Almost infinite

C. No prediction at all

D. May increase or decrease

216 $1/R_{eq} = 1/R_1 + 1/R_2 + 1/R_3 + \dots + 1/R_n$ is the combination in

A. Series

B. Parallel

C. Both of them

D. None of them

217 Which of the following has a negative temperature coefficient of resistance ?

A. Tungsten

B. Carbon

C. Nichrome

D. Platinum

218 What is the SI Unit of Potential difference?

A. Volts

B. Coulomb

C. Meter

D. newton's

219 Correct form of ohm's law

A. $I = VR$

B. $V \propto I$

C. $V = IR$

D. Both B and C

220 Value of current in a short circuit is _____

A. Infinite

B. zero

C. minimum

D. maximum

221 Electric current may be defined as

A. Rate of flow of charge

B. Rate of flow of momentum

C. Rate of flow of power

D. None of them

ELCTROMAGNETISM

1 Is it possible to separate north pole only from bar magnet

- A. yes
- B. no**
- C. in some cases it is possible
- D. none of these

2 Who stated the Right hand Thumb Rule?

- A. Oersted
- B. Maxwell
- C. Einstein
- D. Fleming**

3 If a charged particle moves through a magnetic field perpendicular to it

- A. both momentum and energy of particle change
- B. momentum as well as energy are constant
- C. energy is constant but momentum changes**
- D. momentum is constant but energy changes

4 Magnetic field lines form _____ loops from pole to pole.

- A. open
- B. closed**
- C. branched
- D. opened or closed

5 A circular loop of area 0.05 m^2 rotates in a uniform magnetic field of 0.2 T . If the loop rotates about its diameter which is perpendicular to the magnetic field, find flux linked with loop when its plane is inclined 60° to the field.

- A. 0.01 wb
- B. 0 Wb
- C. $8.66 \times 10^{-3} \text{ Wb}$**
- D. 0.86 wb

6 In a cyclotron, a charged particle

- A. undergoes acceleration all the time.**
- B. speeds up between the dees because of the magnetic field.
- C. speeds up in a dee.
- D. slows down within a dee and speeds up between dees

7 e/m ratio for an electron in electric and magnetic field is

- A. $e/m = B^2 r/E$
- B. $E/(B^2 r)$**

C. E^2/rB^2

D. B^2/Er

8 During the circular path in magnetic field, what is the magnetic force

- A. $F = qB$
- B. $F = qB^2$
- C. $F = qB/v$
- D. $F = qvB$**

9 Magnetic field will not produce in case of

- A. charged positive particles
- B. charged negative particles
- C. neutral particles**
- D. All of these

10 Electron and proton both with same momentum enter perpendicularly in uniform field

- A. path of proton will be more curved
- B. path of electron will be more curved
- C. both have same curved path**
- D. path of both will be straight line

11 How can a magnetic field be produced?

- A. Using a permanent magnet
- B. Electric current
- C. Using a temporary magnet
- D. Using a permanent magnet or electric current**

12 Lorentz force can be represented as

- A. $q[E + (v \times B)]$**
- B. $q[E + vB \cos \theta]$
- C. both
- D. none of these

13 A charged particle is moving on a circular path with velocity v in a uniform magnetic field B , if the velocity of the charged particle is doubled and strength of magnetic field is halved, then radius becomes

- A. 8 times
- B. 2 times
- C. 4 times**
- D. 16 times

14 A rectangular loop of dimension 3 cm by 5 cm is placed perpendicular in uniform magnetic field of 0.1 T , find the magnetic flux through the loop

- A. 1.5 wb
- B. 0.15 wb**

ELCTROMAGNETISM

- C. 0.015 wb
 D. 15 wb

15 One charge enters in magnetic field of 2×10^{-2} T normally with specific charge 10^8 C/kg and velocity of 10^7 m/s. What will be the radius of circle?

- A. 1 m
 B. 0.5 m
C. 5 m
 D. 10 m

16 The magnetic field lines generated in current carrying conductor are

- A. circular**
 B. triangular
 C. linear
 D. none of these

17 .Magnetic field lines created by current carrying wire is

- A. Helical
 B. Elliptical
 C. Hyperbolic
D. Circular

18 A strong magnetic field is applied on a stationary electron. Then the electron

- A. moves in the direction of the field.
 B. moves perpendicular to the direction of the field.
 C. moves opposite to the direction of the field.
D. remains stationary.

19 What is the magnitude of the magnetic field $B = (0.3i + 0.4j)$ T?

- A. 5 T
 B. 2.5 T
C. 0.5 T
 D. 2 T

20 Ampere's law is $\oint B \cdot dl =$

- A. μI^2
 B. μ/I
C. μI
 D. μI^2

21 Magnetic Field lines move from _____

- A. north to south**
 B. south to north
 C. east to west

D. west to east

22 In Lorentz force, magnetic force is

- A. work force
B. deflecting force
 C. resistive force
 D. none of these

23 A 3 cm wire carrying a current of 10A is placed inside a solenoid of magnetic field 0.35 T .The Net force felt by wire is

- A. 11.5N
B. 10.5N
 C. 9.5N
 D. 8.5N

24 Is it possible to visualize magnetic flux lines

- A. yes directly we can see with eyes
 B. we need microscope
 C. we need telescope
D. All cases are not possible

25 Magnetic Field lines move from _____

- A. north to south**
 B. south to north
 C. east to west
 D. west to east

26 Is it possible to visualize magnetic flux lines

- A. yes directly we can see with eyes
 B. we need microscope
 C. we need telescope
D. All cases are not possible

27 Magnetic field density outside the solenoid is

- A. strong
 B. infinite
C. negligible
 D. none of these

28 What is the angular frequency during the circular motion?

- A. $q\mu/B$
 B. m/qB
C. qB/m
 D. $q\mu B$

29 The flux is the region where magnetic field

- A. changes direction
 B. changes strength

ELECTROMAGNETISM

- C. changes polarity
D. no change occur

30 Unit of magnetic flux density is

- A. Tesla
 B. Wb m^2
 C. N/Am
D. All

31 When north pole of bar magnet move towards a conducting loop, induced current flows in

- A. clockwise sense**
 B. anticlockwise sense
 C. not generates
 D. not enough information

32 What happens to the flux if applied magnetic field is doubled on the same surface

- A. becomes half
B. becomes twice
 C. becomes infinite
 D. becomes 4 times

33 $e/m =$

- A. mv Br
B. v/Br
 C. $r \text{ Bv}$
 D. B vr

34 Magnetic flux density is a

- A. scalar quantity
B. vector quantity
 C. sometimes scalar sometimes vector
 D. none of these

35 Whenever the magnetic flux linked with an electric circuit changes, an emf is induced in the circuit. This is called

- A. electromagnetic induction**
 B. kirchoff's law
 C. hysteresis loss
 D. Lenz's law

36 Electric charge in uniform motion produces

- A. electric field
 B. magnetic field
C. both of these
 D. none of these

37 Find the maximum force of the conductor having length 60cm, current 2.75A and flux density of 9 units.

- A. 14.85**
 B. 18.45
 C. 84.25
 D. 7.325

38 When a charge experience a force, there will be _____ field developed

- A. magnetic
B. electric
 C. static
 D. all of these

39 A monoenergetic electron beam with an electron speed of $5.20 \times 10^6 \text{ m/s}$ is subject to a magnetic field of $1.30 \times 10^{-4} \text{ T}$ normal to the beam velocity. What is the radius of the circle traced by the beam, given e/m for electron equals $1.76 \times 10^{11} \text{ C/kg}$

- A. 22.7 cm**
 B. 21.3 cm
 C. 20 cm
 D. 21.9 cm

40 Magnetic induction is also called

- A. flux
 B. magnetization
C. magnetic intensity
 D. flux intensity

41 An uncharged conductor has

- A. electrons**
 B. protons
 C. holes
 D. all of these

42 When a charge passes through a region undeflected then with $F_e = F_m$, _____

- A. $B=0$
B. $B \perp E$
 C. both
 D. none

43 A steady current passing through a conductor produces

- A. electric field
B. magnetic field

ELCTROMAGNETISM

- C. both of these
 D. none of these

44 One proton beam enters in magnetic field of 10^{-4} T normally with specific charge 10^{11} C/kg and velocity of 10^7 m/s. What will be the radius of circle?

- A. 0.1 m
B. 1 m
 C. 10 m
 D. none of these

45 The magnetic force is simply a

- A. reflecting force
B. deflecting force
 C. restoring force
 D. gravitational force

46 Find the force due to a current element of length 2 cm and flux density of 12 tesla. The current through the element will be 5A.

- A. 1N
B. 1.2N
 C. 1.4N
 D. 1.6N

47 1 tesla is equal to

- A. 100 N Am
B. 1 N/Am
 C. 0.1 Nm/A
 D. 1 Nm/A

48 If the direction of current is upward pointed by thumb, magnetic field is north side, than force will be

- A. left**
 B. right
 C. top
 D. bottom

49 Find the Lorentz force of a charge 2.5C having an electric field of 5 units and magnetic field of 7.25 units with a velocity 1.5m/s.

- A. 39.68**
 B. 68.93
 C. 89.39
 D. 63.98

50 Magnetic force between two wires which are having current in opposite direction will A. attract each other

- B. repel each other**
 C. experience no force between them
 D. none of these

51 What is the strength of magnetic field known as

- A. flux
 B. density
 C. magnetic strength
D. magnetic flux density

52 Find the electric field when the velocity of the field is 12m/s and the flux density is 8.75 units.

- A. 510
B. 105
 C. 150
 D. 165

53 A charged particle enters in a strong magnetic field, its K.E

- A. decreases
 B. increases then decreases
 C. becomes zero
D. remains constant

54 Which, among the following qualities, is not affected by the magnetic field?

- A. Moving charge
 B. charge in magnetic flux
 C. current flowing in conductor
D. stationary charge

55 A charged particle is moving in a cyclotron, what effect on the radius of path of this charged particle will occur when the frequency of the ratio frequency field is doubled?

- A. it will also doubled
 B. it will be halved
 C. it will increase four times
D. remain unchanged

56 A circular loop of radius 2 m placed having area in the direction of magnetic field of 100 T, flux will be

- A. 1296 wb**
 B. 12.96 wb

ELECTROMAGNETISM

- C. 1190 wb
 D. 1426 wb

57 $\cos \theta = \Phi /$

- A. BA**
 B. A
 C. B
 D. B^2

58 Strength of magnetic field is called

- A. strength
 B. flux
C. magnetic flux density
 D. density

59 Magnetic flux is the dot product of magnetic induction and

- A. area
B. vector area
 C. unit area
 D. none of these

60 SI unit of magnetic induction is

- A. Weber
 B. Gauss
C. Tesla
 D. Maxwell

61 When a charge particle enters in the magnetic field perpendicular to the velocity of charge, followed path is

- A. circular**
 B. parabolic
 C. elliptical
 D. hyperbolic

62 An electron is moving along the line of force in magnetic field B with velocity u , then maximum force acting on the charge is given by

- A. Bue
 B. Bq/u
 C. Bu/q
D. 0

63 Magnetic Force between two wires is inversely proportional to

- A. distance**
 B. current on them
 C. Charge on them

D. none of these

64 A circular loop of area 0.05 m^2 rotates in a uniform magnetic field of 0.2 T . If the loop rotates about its diameter which is perpendicular to the magnetic field, find flux linked with loop when its plane is normal to the field

- A. 0.01 wb**
 B. 0 Wb
 C. $8.66 \times 10^{-3} \text{ Wb}$
 D. 0.86 wb

65 $F = e(v \times B)$ is valid for

- A. electron
B. proton
 C. neutron
 D. all

66 If a current wire of 2 A and length 5 m enters perpendicular to magnetic field of 10 T . calculate the force experienced by it

- A. 50 N
B. 100 N
 C. 200 N
 D. 25 N

67 Magnetic field is very strong where field lines are

- A. zero
 B. far apart
C. very close
 D. none of these

67 Magnetic flux is given by

- A. dot product of magnetic field and area vector**
 B. cross product of magnetic field and area vector
 C. both of these
 D. none of these

68 If a Charge of 2 C is travelling parallel to a magnetic field of 4 T with 20 m/s Calculate the net force on it

- A. 160 N
 B. 120 N
C. 0 N
 D. 100 N

69 A beam of ion with velocity $2 \times 10^5 \text{ m/s}$ enters normally into a magnetic field of 0.04 T . The

ELCTROMAGNETISM

specific charge of ion is 5×10^7 C/kg. Radius of circle is

- A. 0.1 m**
- B. 0.16 m
- C. 0.2 m
- D. 0.25 m

70 Force on a moving charge in a uniform magnetic field will be maximum, when angle between v and B is

- A. 0
- B. 30
- C. 60
- D. 90**

71 Work done by the magnetic force on charged particle in presence of perpendicular magnetic field is

- A. positive
- B. zero**
- C. negative
- D. none of these

72 Can we see magnetic flux lines?

- A. Yes
- B. No**
- C. Depends on strength of field
- D. Only when the field is large

73 The attraction capacity of electromagnet will increase if the

- A. Core length increases
- B. Core area increases
- C. Flux density decreases
- D. Flux density increases**

73 Unit of relative permeability is

- A. henry
- B. henry m
- C. dimensionless**
- D. henry sq. m

74 A square loop of side 4 m is placed in magnetic field of 10 T, surface of the loop is making angle with the field 60 degree. What will be the flux?

- A. 160 weber**
- B. 80 weber
- C. 40 weber
- D. 80 weber

75 If the direction of the field and area vector is opposite then field is

- A. positive
- B. zero
- C. negative**
- D. none of these

76 If a charge particle enters in a region where electric and magnetic field are parallel to its motion, then it will

- A. deflect upwards
- B. deflect downward
- C. speed up**
- D. speed down

77 If a proton, alpha particle and photon moving with same velocity enter in uniform magnetic field then which particle will deflect more

- A. proton
- B. alpha particle**
- C. photon
- D. all of these

78 Two α -particles have the ratio of their velocities as 3 : 2 on entering the field. If they move in different circular paths, then the ratio of the radii of their paths is

- A. 2 : 3
- B. 3 : 2**
- C. 4 : 9
- D. 9 : 4

79 What is the radius of circular path, if particle has mass m and charge q

- A. $r = qb/m$
- B. $r = mv/B$
- C. $r = mv/qB$**
- D. $r = mvr/Qb$

80 Current carrying loop behaves like a

- A. monopole
- B. dipole**
- C. quadrupole
- D. octupole

81 A solenoid 15.0 cm long has 300 turns of wire, a current 5 A flows through it. The magnitude of magnetic field inside the solenoid is

- A. 1.37×10^{-7} w/m²**

ELECTROMAGNETISM

- B. $1.37 \times 10^{-5} \text{ w/m}^2$
 C. $1.37 \times 10^{-} \text{ w/m}^2$
 D. $1.37 \times 10^{-2} \text{ w/m}^2$

82 The magnetic flux (ϕ) linked with a coil is related to the number of turns (N) of the coil as:

- A. $f \propto N$**
 B. $f \propto N^{-1}$
 C. $f \propto N^2$
 D. $f \propto N^{-2}$

83 If velocity of charged particle and magnetic field are at a fix angle not 90 then path will be

- A. circular
 B. straight line
 C. spherical
D. helical

84 A circular loop of area 0.05 m^2 rotates in a uniform magnetic field of 0.2 T . If the loop rotates about its diameter which is perpendicular to the magnetic field, find flux linked with loop when its plane is parallel to the field

- A. 0.01 wb
B. 0 Wb
 C. $8.66 \times 10^{-3} \text{ Wb}$
 D. 0.86 wb

85 The magnetic field is parallel to a surface, then the magnetic flux through the surface is

- A. Zero
B. small but not zero
 C. infinite
 D. large but not infinite

86 A charge of $1 \mu\text{C}$ is moving antiparallel to magnetic lines of force, then the magnetic force acting on charge is

- A. 0**
 B. vB
 C. $vB \sin \theta$
 D. qvB

87 If magnetic field vector is $B = (i + 5j + 2k)$ and area vector is $(6i - 2j + 2k)$ then flux related to this is

- A. 10 Wb
 B. 15 Wb
 C. 20 Wb

D. 0 Wb

88 If a charged particle is at rest but we are seeing it from a train then we observe

- A. electric field
 B. magnetic field
C. both fields
 D. none of these

89 Magnetic field along the axis of solenoid with n turns per unit length carrying current I is given by

- A. $B = \mu_0 n I$**
 B. $B = \mu_0 N / L$
 C. $B = \mu_0 I N$
 D. $B = \mu_0 I N L$

90 If a charged particle moves through a magnetic field perpendicular to it

- A. both momentum and energy of particle change
 B. momentum as well as energy are constant
C. energy is constant but momentum changes
 D. momentum is constant but energy changes

91 If velocity of charged particle and magnetic field are at a fix angle not 90 then path will be

- A. circular
 B. straight line
 C. spherical
D. helical

92 A loop of radius 1 m is placed on a inclined of 60 degree with the magnetic field of 100 T , corresponding flux will be

- A. 314 wb
 B. 107 wb
C. 157 wb
 D. 435 wb

93 A strong magnetic field is applied on a stationary electron. Then the electron

- A. moves in the direction of the field.
 B. moves perpendicular to the direction of the field.
 C. moves opposite to the direction of the field.
D. remains stationary.

94 Magnetic field lines have a property that lines are

- A. non intersecting**
 B. intersect near south pole
 C. intersect near north pole

ELECTROMAGNETISM

D. intersect every where

95 Electron charge in accelerating motion will produce

- A. electric field
- B. magnetic field
- C. EM waves**
- D. none of these

96 $\cos \Theta = \Phi /$

- A. BA**
- B. A
- C. B
- D. B^2

97 A charged particle is moving on circular path with velocity v in a uniform magnetic field B , if the velocity of the charged particle is doubled and strength of magnetic field is halved, then radius becomes

- A. 8 times
- B. 2 times
- C. 4 times**
- D. 16 times

98 Find the force due to a current element of length 2 cm and flux density of 12 tesla. The current through the element will be 5A.

- A. 1N
- B. 1.2N**
- C. 1.4N
- D. 1.6N

99 The attraction capacity of electromagnet will increase if the

- A. Core length increases
- B. Core area increases
- C. Flux density decreases
- D. Flux density increases**

100 Magnetic Force between two wires is inversely proportional to

- A. distance**
- B. current on them
- C. Charge on them
- D. none of these

101 A solenoid bent into a circle is called

- A. Resistor
- B. capacitor

C. inductor

D. toroid

102 Magnetic flux is maximum when angle is

- A. 0 degree**
- B. 90 degree
- C. 120 degree
- D. all of these

103 Find the magnetic force when a charge 3.5C with flux density of 4 units is having a velocity of 2m/s

- A. 14
- B. 28**
- C. 7
- D. 32

104 Force experienced by charge particles in magnetic field is

- A. perpendicular to velocity
- B. perpendicular to field
- C. parallel to field
- D. perpendicular to velocity and field**

105 Who stated the Right hand Thumb Rule?

- A. Oersted
- B. Maxwell
- C. Einstein
- D. Fleming**

106 If a charged particle moves through a magnetic field perpendicular to it

- A. both momentum and energy of particle change
- B. momentum as well as energy are constant
- C. energy is constant but momentum changes**
- D. momentum is constant but energy changes

107 During the circular path in magnetic field, what is the magnetic force

- A. $F = qB$
- B. $F = qB^2$
- C. $F = qB/v$
- D. $F = qvB$**

108 One charge enters in magnetic field of 2×10^{-2} T normally with specific charge 10^8 C/kg and velocity of 10^7 m/s. What will be the radius of circle?

- A. 1 m
- B. 0.5 m
- C. 5 m**
- D. 10 m

ELCTROMAGNETISM

109 Do magnetic flux lines intersect?

- A. Yes
- B. No**
- C. depends on strength of field
- D. cannot be determined

110 A strong magnetic field is applied on a stationary electron. Then the electron

- A. moves in the direction of the field.
- B. moves perpendicular to the direction of the field.
- C. moves opposite to the direction of the field.
- D. remains stationary**

111 What is the magnitude of the magnetic field $B = (0.3\mathbf{i} + 0.4\mathbf{j})$ T?

- A. 5 T
- B. 2.5 T
- C. 0.5 T**
- D. 2 T

112 Ampere's law is $\oint \mathbf{B} \cdot d\mathbf{l}$

- A. μI^2
- B. μI
- C. μ**
- D. $I\mu^2$

113 Is it possible to visualize magnetic flux lines

- A. yes directly we can see with eyes
- B. we need microscope
- C. we need telescope
- D. All cases are not possible**

114 When north pole of bar magnet move towards a conducting loop, induced current flows in

- A. clockwise sense**
- B. anticlockwise sense
- C. not generates
- D. not enough information

115 What happens to the flux if applied magnetic field is doubled on the same surface

- A. becomes half
- B. becomes twice**
- C. becomes infinite
- D. becomes 4 times

116 If magnetic field vector is $\mathbf{B} = (\mathbf{i} + 2\mathbf{j} + \mathbf{k})$ and area vector is $(2\mathbf{i} + \mathbf{j} + \mathbf{k})$ then flux related to this is

- A. 4wb
- B. 5 wb**

- C. 6 wb
- D. 7 wb

117 When a charge experience a force, there will be _____ field developed

- A. magnetic
- B. electric**
- C. static
- D. all of these

118 When a charge passes through a region undeflected then with $\mathbf{F}_e = \mathbf{F}_m$, _____

- A. $B=0$
- B. $\mathbf{B} \perp \mathbf{E}$**
- C. both
- D. none

119 One proton beam enters in magnetic field of 10^{-4} T normally with specific charge 10^{11} C/kg and velocity of 10^7 m/s. What will be the radius of circle?

- A. 0.1 m
- B. 1 m**
- C. 10 m
- D. none of these

120 1 tesla is equal to

- A. 100 N/Am
- B. 1 N/Am**
- C. 0.1 Nm/A
- D. 1 Nm/A

121 Find the Lorentz force of a charge 2.5C having an electric field of 5 units and magnetic field of 7.25 units with a velocity 1.5m/s.

- A. 39.68**
- B. 68.93
- C. 89.39
- D. 63.98

122 Find the electric field when the velocity of the field is 12m/s and the flux density is 8.75 units.

- A. 510
- B. 105**
- C. 150
- D. 165

123 SI unit of magnetic induction is

- A. Weber
- B. Gauss

ELECTROMAGNETISM

C. Tesla

D. Maxwell

124 When a charge particle enters in the magnetic field perpendicular to the velocity of charge, followed path is

A. circular

B. parabolic

C. elliptical

D. hyperboli

125 An electron is moving along the line of force in magnetic field B with velocity u , then maximum force acting on the charge is given by

A. Bue

B. Bq/u

C. Bu/q

D. 0

126 Magnetic Force between two wires is inversely proportional to

A. distance

B. current on them

C. Charge on them

D. none of these

127 $F = e(v \times B)$ is valid for

A. electron

B. proton

C. neutron

D. all

128 If a current wire of 2 A and length 5m enters perpendicular to magnetic field of 10T. calculate the force experienced by it

A. 50N

B. 100N

C. 200N

D. 25N

ELECTROMAGNETIC INDUCTION

1 If the peak to peak voltage is 10V, calculate the peak voltage.

- A. 2V
- B. 10V
- C. 4V
- D. **5V**

2 Alternating Current Generators use

- A. coiled rings
- B. **split rings**
- C. **slip rings**
- D. solenoid rings

3 In step down transformer _____ is decreased in secondary coils

- A. electric field
- B. **magnetic field**
- C. **number of turns**
- D. none of these

4 Principle of transformer is

- A. **mutual inductance**
- B. self induction
- C. motional emf
- D. none of these

In step up transformer

- A. $V_s/V_p = 1$
- B. $V_s < V_p$
- C. $V_s = V_p$
- D. **$V_s > V_p$**

5 An a.c. generator consists of a coil of 50 turns and an area 2.5 m^2 rotating at an angular speed of 60 rad s^{-1} in a uniform magnetic field of 0.3 T between two fixed pole pieces. What is the flux through the coil, when the current is zero

- A. **Maximum**
- B. Minimum
- C. Zero
- D. Independent

6 Primary and secondary powers of a transformer are 200W and 100 W respectively, the efficiency of a transformer is

- A. **50%**
- B. 1
- C. 20%
- D. 10%

7 The transformer laminations are insulated from each other by

- A. Mica strip
- B. Paper
- C. **Thin coating of Varnish**
- D. Any of the above

8 The displacement between A and B is defined as:...

- A. **change in position of an object from A to B**
- B. any distance between two points
- C. longest distance from A to B
- D. longest distance between two points

9 For ideal step up transformer P_s _____ P_p .

- A. **equal to**
- B. greater than
- C. less than
- D. none of these

10 Lamination of the transformer core is made of

- A. cast iron
- B. **silicon steel**
- C. Aluminium
- D. cast steel

11 A transformer has negative voltage regulation when its load power factor is

- A. **Lagging**
- B. **Leading**
- C. Unity
- D. any of above

12 If we make the magnetic field stronger, the value of induced current is

- A. Decreased
- B. **Increased**
- C. Vanished
- D. Kept constant

13 Emf produced in generator is

- A. $N\omega AB \cos(\omega t)$
- B. $N\omega AB \tan(\omega t)$
- C. **$N\omega AB \cot(\omega t)$**
- D. **$N\omega AB \sin(\omega t)$**

14 Magnetic flux is scalar product of

- A. B and V
- B. **B and A**
- C. B and I

ELECTROMAGNETIC INDUCTION

D. none of these

15 An electric power is transmitted over long distance through conducting wire at high voltage and low current because

A. it causes less amount of power loss

B. it reduces the possibility of theft

C. High voltage waves travel faster

D. generators produce electrical energy at high voltage

16 The coupling coefficient of perfectly coupled coil is

A. zero

B. 1

C. more than 1

D. infinite

17 If magnetic field is doubled then magnetic energy density becomes

A. four times

B. two times

C. three times

D. six times

18 What is the duration of one cycle known as

A. period

B. cycle

C. instantaneous value

D. sin wave

19 Faraday's law explains how electric field will interact with

A. electric field

B. magnetic field

C. battery

D. none of these

20 The voltage turn ratio of step down transformer is

A. 1:2

B. 1:3

C. 2:1

D. 2:5

21 The secondary turns of which of the following transformers is always kept closed for _____ transformer

A. power

B. voltage

C. current

D. step down

22 Faraday law states that the rate of change of magnetic flux is equal to

A. electromotive force

B. induced current

C. induced flux

D. induced magnetic field

23 If an A.C voltage rms value of 10 volt is applied as input of half wave rectifier, then the rms voltage value of D.C output will be

A. 10V

B. 10.3V

C. 10.7V

D. 9.3V

24 In an A.C. generator, increase in number of turns in the coil

A. increases emf

B. decreases emf

C. makes the emf zero

D. maintains the emf at a constant value

25 A metal rod of length 4 m , velocity 5m/s and magnetic field 0.5 T induced emf is

A. 10 V

B. 20V

C. 30V

D. 4V

26 Time varying magnetic field creates electric field, this is called

A. electric induction

B. magnetic induction

C. electromagnetic induction

D. dipole induction

27 For step down transformer N_s _____ N_p

A. equal to (=)

B. less than (<)

C. greater than (>)

D. not equal

28 The direction of induced current is always so as to oppose the change which causes the current is

A. Faraday's Law

ELECTROMAGNETIC INDUCTION

B. Lenz's Law

C. Ohm's Law

D. Kirchhoff's Law

29 If the number of flux passing through a coil per unit time is doubled then motion emf also

A. halves

B. triples

C. doubles

D. remains unchanged

30 A 220 V main supply is connected to a resistance of 100 k ohms. The effective current is

A. 2.2 mA

B. $2.2/\sqrt{2}$ mA

C. $2.2 \times \sqrt{2}$ mA

D. none of the above

31 For step down transformer N_s _____ N_p

A. equal to (=)

B. less than (<)

C. greater than (>)

D. not equal

32 For currents changing with time will produce _____ field

A. electrostatic

B. magnetostatic

C. electromagnetic

D. none of these

33 In step up transformer

A. $V_s/V_p = 1$

B. $V_s < V_p$

C. $V_s = V_p$

D. $V_s > V_p$

34 Lenz's law provides information about direction of

A. inductance

B. induced current

C. induced flux

D. induced magnetic field

35 If number of loops are increased then according to Faraday law _____ will increase

A. voltage

B. electric field

C. magnetic field

D. all of these

36 The turns ratio of transformer is 10, It means that;

A. $I_s = 10 I_p$

B. $N_s = N_p / 10$

C. $N_s = 10 N_p$

D. $V_s = V_p / 10$

37 Electric motor converts _____ to _____ energy

A. electric , mechanical

B. mechanical , electric

C. mechanical , potential

D. not enough information

38 Which one of the following is not present in AC generator

A. Armature

B. Magnet

C. slip rings

D. Commutator

39 Power transfer from primary to secondary is through flux linkage, so the primary and secondary coils should be wound in such a way that flux coupling between them is

A. min

B. constant

C. zero

D. max

40 According to Faraday law EMF stands for

A. electromagnetic friction

B. electromagnetic force

C. electromagnetic function

D. none of these

41 Harmonics in transformer result in

A. increases core loss

B. Increases $I^2 R$ loss

C. Interference with communication circuits

D. All of the above

42 What is the duration of one cycle known as

A. period

B. cycle

C. instantaneous value

D. sin wave

ELECTROMAGNETIC INDUCTION

43 Time varying magnetic field creates electric field, this is called

- A. electric induction
- B. magnetic induction
- C. electromagnetic induction**
- D. dipole induction

44 Non-inductive resistances are used in

- A. ammeter
- B. voltmeter
- C. resistance boxes
- D. all of these**

45 When currents are moving in the same direction in two conductors, then the force will be

- A. attractive**
- B. repulsive
- C. retracting
- D. opposing

46 Motional emf can be produced with

- A. changing magnetic field in space
- B. Changing magnetic field in time**
- C. Changing flux with space
- D. Constant magnetic field

47 Magnetic flux is scalar product of

- A. B and V
- B. B and A**
- C. B and I
- D. none of these

48 Henry is unit of

- A. self inductance only
- B. mutual inductance
- C. both a) and b)**
- D. emf

49 Transformer is based on the theory of

- A. self inductance only
- B. mutual inductance**
- C. Capacitive effect
- D. all of these

50 According to Faraday's Law, emf induced in circuit depends on

- A. max. magnetic flux
- B. rate of change of magnetic flux**
- C. change in magnetic flux

D. initial flux

51 Motional emf induced in a coil is dependent on

- A. Magnetic field
- B. orientation
- C. length**
- D. all of these**

52 Step up transformer have _____ turns in secondary coil

- A. more**
- B. less
- C. equal
- D. zero

53 The Lenz's law refers to

- A. induced current
- B. induced potential
- C. motional emf
- D. all of these**

54 X is a rectangular coil consisting of a large number of turns of copper wire wound over a soft iron core in an a.c. generator. Identify X

- A. Slip rings
- B. Armature**
- C. Copper brushes
- D. Field magnet

55 The role of inductance is equivalent to:

- A. inertia**
- B. force
- C. energy
- D. momentum

56 A sinusoidal current has rms value of 10A. What is the peak value of current?

- A. 144.4A
- B. 1.4A
- C. 0.1414A
- D. 14.4A**

57 A device that consumes electrical energy in the external circuit of generator is known as

- A. appliances
- B. machines
- C. motors
- D. load**

58 A real transformer does not change

ELECTROMAGNETIC INDUCTION

- A. voltage level
- B. current level
- C. power level
- D. frequency level

59 Weber is the unit of _____

- A. magnetic flux
- B. electric flux
- C. both a or b
- D. none of these

60 The core of transformer is made up of

- A. hard iron
- B. Soft iron
- C. Aluminium
- D. Copper

61 Principle of electric generator is based on

- A. biot savart's law
- B. ampere's law
- C. newton's law
- D. faraday law

62 Face of coil having clockwise current

- A. behaves like north pole
- B. behaves like south pole
- C. becomes magnet of varying poles
- D. does not behaves like magnet

63 The root mean square value of the alternating current is equal to

- A. twice the peak value
- B. half the peak value
- C. equal to the peak value
- D. $(1/\sqrt{2})$ times the peak value

64 Which one of the following is not present in AC generator

- A. Armature
- B. Magnet
- C. slip rings
- D. Commutator

65 The voltage turn ratio of step down transformer is

- A. 1:2
- B. 1:3
- C. 2:1
- D. 2:5

66 Lenz's law provides information about direction of

- A. inductance
- B. induced current
- C. induced flux
- D. induced magnetic field

67 Self inductance varies with the applied current in coil as

- A. I^2
- B. $1/I$
- C. I
- D. remains unchanged

68 Which one of the following is not found in a DC generator?

- A. armature
- B. slip rings
- C. Commutators
- D. Magnet

69 Transformer operates on

- A. A.C
- B. D.C
- C. both
- D. none of these

70 220V, 50 Hz AC supply is connected across a resistor of 50 k ohms. The current at time t Seconds, assuming that it is zero at $t = 0$, is

- A. $4.4 \sin(314t)$ mA
- B. $4.4 \sin(157t)$ mA
- C. $6.2 \sin(314t)$ mA
- D. $6.2 \sin(157t)$ mA

71 Self inductance varies number of turns in coil as

- A. N
- B. N^3
- C. N^2
- D. $1/N$

72 Power transformers are designed to have maximum efficiency at

- A. Full load
- B. 50%
- C. 80%
- D. No load

73 Motional emf induced in a coil is independent of

- A. number of turns
- B. change in flux

ELECTROMAGNETIC INDUCTION

C. change in time

D. Resistance

74 Calculate the frequency if the number of revolutions is 300 and the paired poles are 50.

A. 15 kHz

B. 150 kHz

C. 1500 kHz

D. 150 Hz

75 Maximum emf generated in a generator is

A. $\epsilon_0 = N\omega AB \sin \Theta$

B. $\epsilon_0 = \epsilon \sin \Theta$

C. $\epsilon = \epsilon_0 \sin \Theta$

D. $\epsilon_0 = N\omega AB$

76 Breather is provided in a transformer to

A. Absorb moisture of air during breathing

B. provide cold air in the transformer

C. The filter of transformer oil

D. None of above

77 Non-inductive resistances are used in

A. ammeter

B. voltmeter

C. resistance boxes

D. all of these

78 Transformer is based on the theory of

A. self inductance only

B. mutual inductance

C. Capacitive effect

D. all of these

79 One of the major reasons for heat loss in transformer is

A. Radiation loss

B. Convection loss

C. eddy current loss

D. none of these

80 For step down transformer N_s _____ N_p

A. equal to (=)

B. less than (\leq)

C. greater than ($>$)

D. not equal

81 A transformer steps down from 200V to 50 V. It has secondary winding = 40 turns, then windings in primary coil are

A. 150

B. 160

C. 170

D. 200

82 Which of the following remains unchanged in transformer

A. Voltage

B. current

C. Power

D. Capacitance

83 Identify the factor on which mutual inductance does not depend.

A. relative orientation

B. relative separation of two coils

C. reciprocity

D. permeability of the core material

84 Current that fluctuates periodically with time is

A. DC current

B. BC current

C. AC current

D. magnetic current

85 The turns ratio of transformer is 10, It means that:

A. $I_s = 10 I_p$

B. $N_s = N_p / 10$

C. $N_s = 10 N_p$

D. $V_s = V_p / 10$

86 Lenz law is in accordance with conservation of

A. momentum

B. charge

C. current

D. energy

87 $\text{emf} = -N(\Delta\Phi/\Delta t)$ is according to

A. Ampere's Law

B. Faraday's Law

C. Lenz's Law

D. none of these

88 Electric field generated due to induction is

A. conservative

B. nonconservative

C. depends on internal property

D. not enough information

ELECTROMAGNETIC INDUCTION

89 The principle of a direct current generator is based on

- A. Coulomb's Law
- B. Ampere's Law
- C. Faraday's Law
- D. Lenz's Law

90 The coupling coefficient of perfectly coupled coil is

- A. zero
- B. 1
- C. more than 1
- D. infinite

91 Harmonics in transformer result in

- A. increases core loss
- B. Increases I^2R loss
- C. Interference with communication circuits
- D. All of the above

92 Power transformers have maximum efficiency at

- A. no load
- B. full load
- C. half load
- D. double load

93 When $N_s > N_p$ then transformer is

- A. step up
- B. step down
- C. primary
- D. secondary

94 The maximum instantaneous value measured from zero value is known as?

- A. peak value
- B. peak to peak value
- C. cycle
- D. period

95 The frequency of applied A.C is 2 K.Hz. Its time period will be

- A. 0.5×10^{-3} sec
- B. 0.5 second
- C. 5 sec
- D. 2 sec

96 Calculate the maximum emf when the velocity is 10m/s, the length is 3m and the magnetic field density is 5T

A. 150V

- B. 300V
- C. 100V
- D. 0V

97 The direction of induced current is always so as to oppose the change which causes the current is

- A. Faraday's Law
- B. Lenz's Law
- C. Ohm's Law
- D. Kirchoff's Law

98 Mutual inductance has a practical role in performance of

- A. AC generator
- B. radio choke
- C. DC generator
- D. Transformer

99 Electric motor converts _____ to _____ energy

- A. electric , mechanical
- B. mechanical , electric
- C. mechanical , potential
- D. not enough information

100 If the number of flux passing through a coil per unit time is doubled then motion emf also

- A. halves
- B. triples
- C. doubles
- D. remains unchanged

101 Voltage in secondary winding is _____ to current in secondary coil

- A. directly proportional
- B. inversely proportional
- C. directly squared proportional
- D. not enough information

102 The magnetic flux (Φ) linked with a coil is related to the number of turns (N) of the coil as:

- A. $f \propto N$
- B. $f \propto 1/N$
- C. $f \propto 1/(N)^2$
- D. $f \propto N^2$

103 A 100 turn coil of area 0.1 m^2 rotates at half a revolution per second. It is placed in a uniform

ELECTROMAGNETIC INDUCTION

magnetic field of 0.01 T perpendicular to the axis of rotation of the coil. Calculate the maximum voltage generated in the coil?

- A. 256.33 V
- B. 89.12V
- C. 0.314V**
- D. 3.1455 V

104 When currents are moving in the same direction in two conductors, then the force will be

- A. attractive**
- B. repulsive
- C. retracting
- D. opposing

105 In step up transformer _____ is increased in secondary coils

- A. electric field
- B. magnetic field**
- C. number of turns**
- D. none of these

106 Transformation ratio of transformer is given by

- A. V_s/V_p**
- B. I_p/I_s
- C. N_s/N_p
- D. all of these

107 For a coil self inductance L and current I then flux passing through it is

- A. LI**
- B. LI^2
- C. L^2I
- D. $(LI)^2$

108 A cable 4 km long and of total resistance 1 ohm carries electric current from a generator producing 100kW at 10,000 Volts. The current in amperes in the cable is

- A. 10
- B. 10,000
- C. 1000
- D. 100,000**

109 The mutual induction happens in

- A. AC generator
- B. DC generator
- C. Battery**
- D. Transformer**

110 The open-circuit test in a transformer is used to measure

- A. Copper loss
- B. winding loss
- C. Total loss
- D. core loss**

111 An electric power is transmitted over long distance through conducting wire at high voltage and low current because

- A. it causes less amount of power loss**
- B. it reduces the possibility of theft
- C. High voltage waves travel faster
- D. generators produce electrical energy at high voltage

112 Core of transformer is made up of

- A. copper
- B. Aluminum
- C. iron**
- D. steel

113 For a metal rod of length L and moving with speed v in perpendicular to magnetic field then motional emf at its end is

- A. lvB
- B. lvB^2
- C. lv^2B
- D. None of these**

114 If number of loops are increased than according to Faraday law ____ will increase

- A. voltage
- B. electric field
- C. magnetic field
- D. all of these**

115 An ideal step down transformer is connected to main supply of 240V. it is desired to operate 12V, 30W lamp. What is the current in primary coil?

- A. 0.125A**
- B. 0.5A
- C. 125A
- D. 12.5A

116 In order to enhance magnetic flux, the primary and secondary coils of the transformer are wound on

- A. soft iron core**
- B. iron core

ELECTROMAGNETIC INDUCTION

- C. hard iron core
 D. steel core

117 Which of the following losses in a transformer is zero even at full load

- A. Eddy current loss
 B. Core loss
 C. Copper loss
D. Friction loss

118 According to Faraday law EMF stands for

- A. electromagnetic friction
B. electromagnetic force
 C. electromagnetic function
 D. none of these

119 If the instantaneous current in a circuit is given by $I = A \sin(\omega t)$ ampere, the rms value of the current is:

- A. $2A$
B. $A/\sqrt{2}$
 C. $2\sqrt{2}A$
 D. Zero

120 For a 1 efficient step down transformer

- A. voltage in primary and secondary are equal
 B. current in primary and secondary are equal
C. input power is same as the output power
 D. output power is zero

121 A transformer is used to light 100 W 25 volt lamp from 250 Volt ac mains. The current in the main cable is 0.5 A. Calculate the efficiency of the transformer

- A. 50%
 B. 60%
 C. 90%
D. 80%

122 Which of the following is the unit of mutual inductance?

- A. VsA^{-2}
 B. V^3sA^2
 C. V^2s
D. VsA^{-1}

123 According to Faraday's Law, emf induced in circuit depends on

- A. max. magnetic flux
B. rate of change of magnetic flux
 C. change in magnetic flux

D. initial flux

124 Magnetic flux is _____ product

- A. scalar**
 B. vector
 C. simple
 D. none of these

125 The insulation between sheets of transformer core is to get small

- A. hysteresis loop
B. eddy current
 C. both
 D. none of these

126 For given applied voltage, what will happen if we increase frequency of the applied voltage?

- A. eddy current loss will decrease
 B. eddy current loss will increase
C. eddy current loss will remain unchanged
 D. none of these

127 Energy stored inside the inductor is given by

- A. $(1/2)LI^2$**
 B. LI^2
 C. $(3/2)LI^2$
 D. LI

128 For currents changing with time will produce _____ field

- A. electrostatic
 B. magnetostatic
C. electromagnetic
 D. none of these

129 SI unit of inductance is

- A. Henry**
 B. Farad
 C. Maxwell
 D. Weber

130 Henry is unit of

- A. self inductance only
 B. mutual inductance
C. both a) and b)
 D. emf

131 If the peak voltage is 9V, calculate the peak to peak voltage.

- A. 9V

ELECTROMAGNETIC INDUCTION

- B. 18V
 C. 4.5V
 D. 0V

132 The magnetic field is parallel to a surface, then the magnetic flux through the surface is :

- A. zero
B. small but not zero
 C. infinite
 D. larger than 1

133 Energy stored in an inductor is

- A. electric energy
B. magnetic energy
 C. electromagnetic energy
 D. both a) and b)

134 If the peak to peak voltage is 10V, calculate the peak voltage.

- A. 2V
 B. 10V
 C. 4V
D. 5V

135 Alternating Current Generators use

- A. coiled rings
B. split rings
C. slip rings
 D. solenoid rings

136 In step down transformer _____ is decreased in secondary coils

- A. electric field
 B. magnetic field
C. number of turns
 D. none of these

137 Principle of transformer is

- A. mutual inductance**
 B. self induction
 C. motional emf
 D. none of these

138 An a.c. generator consists of a coil of 50 turns and an area 2.5 m^2 rotating at an angular speed of 60 rad s^{-1} in a uniform magnetic field of 0.3 T between

two fixed pole pieces. What is the flux through the coil, when the current is zero

- A. Maximum**
 B. Minimum
 C. Zero
 D. Independent

139 Primary and secondary powers of a transformer are 200W and 100 W respectively, the efficiency of a transformer is

- A. 50%**
 B. 1
 C. 20%
 D. 10%

140 The transformer laminations are insulated from each other by

- A. Mica strip
 B. Paper
C. Thin coating of Varnish
 D. Any of the above

141 For ideal step up transformer P_s ____ P_p .

- A. equal to**
 B. greater than
 C. less than
 D. none of these

142 Lamination of the transformer core is made of

- A. cast iron
B. silicon steel
 C. Aluminium
 D. cast steel

ELECTRONICS

1 Ripple factor of half wave rectifier is

A. 1.21

B. 0.8

C. 0.6

D. 0.4

2 To get a peak load voltage of 40V out of a bridge rectifier, what should be the approximate rms value of secondary voltage?

A. 0V

B. 14.4V

C. 28.3V

D. 56.6 V

3 Transformer is used in rectification to _____ the supply voltage

A. step up

B. step down

C. equalize

D. none of them

4 To get a peak load voltage of 40V out of a bridge rectifier, what should be the approximate rms value of secondary voltage?

A. 0V

B. 14.4V

C. 28.3V

D. 56.6 V

5 A full wave rectifier passes _____ into positive cycles

A. lower half cycle

B. upper half cycle

C. both cycles

D. none of them

6 In half wave rectification, the output DC voltage is obtained across the load for

A. the positive half cycle of input AC

B. the negative half cycle of input AC

C. the positive and negative half cycles of input AC

D. Either positive or negative half cycle of input

7 Half wave rectifier has _____ diodes

A. 1

B. 2

C. 3

D. 4

8 Which of the following rectifier uses wheatstone bridge to rectify signal

A. half wave

B. full wave

C. bridge

D. All of the above

9 Consider a peak rectifier fed by a 60-Hz sinusoid having a peak value $V_p = 100$ V. Let the load resistance $R = 10$ k Ω . Calculate the fraction of the cycle during which the diode is conducting

A. 1.06 %

B. 2.06%

C. 3.18 %

D. 4.82%

10 In a centre tap full wave rectifier if V_m is the peak voltage across the secondary of transformer, the maximum voltage across reverse bias is

A. V_m

B. $V_m/\sqrt{2}$

C. $2V_m$

D. $V_m/3$

11 Rectifier is a device which converts

A. AC to DC

B. DC to AC

C. AC to triangular current

D. DC to triangular current

12 Half wave rectifier passes only

A. lower half cycle

B. upper half cycle

C. both cycles

D. none of them

13 Ripple factor of full wave rectifier is

A. 1.21

B. 0.6

C. 0.482

D. 0.9

14 Half wave voltage multiplier can provide any degree of voltage multiplication by cascading diodes and capacitors.

A. any doubler

B. any tripler

C. any multiplication

D. none of them

15 A full wave rectifier passes _____ into positive cycles

A. lower half cycle

B. upper half cycle

ELECTRONICS

C. both cycles

D. none of them

16 A circuit that adds positive or negative dc voltage to an input sine wave is called

A. Clamper

B. clipper

C. diode clamp

D. limiter

17 The maximum efficiency of full wave rectifier is

A. 80.60%

B. 40.60%

C. 70%

D. 50%

18 A half wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

A. 100 Hz

B. 25 Hz

C. 200Hz

D. 50Hz

19 The principle behind the working of cathode ray oscilloscope is

A. oscillation

B. half wave rectification

C. full wave rectification

D. none of these

20 Work done by the magnetic force on charged particle in presence of perpendicular magnetic field is

A. positive

B. zero

C. negative

D. none of these

21 Peak voltage in the output of half wave rectifier is 10V so dc component of output voltage is

A. $10\sqrt{2}$

B. $10/\sqrt{2}$

C. $10/\pi$

D. 10π

22 A full wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

A. 100 Hz

B. 25Hz

C. 50Hz

D. 200Hz

23 The maximum efficiency of full wave rectifier is

A. 80.60%

B. 40.60%

C. 70%

D. 50%

24 Average dc Voltage across the load in terms of V_{max} is

A. $0.532 V_{max}$

B. $0.637 V_{max}$

C. $0.759 V_{max}$

D. $0.437 V_{max}$

25 In a half wave rectification, during negative cycle of the wave the diode is

A. reversed biased

B. forward biased

C. potential barrier

D. none of these

26 A half wave rectifier is equivalent to

A. Clamper

B. Clipper

C. Clamper circuit with negative bias

D. Clamper circuit with positive bias

27 The output voltage of a rectifier is

A. smooth

B. pulsating

C. perfectly direct

D. alternating

28 A full wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

A. 100 Hz

B. 25Hz

C. 50Hz

D. 200Hz

29 Centre tap rectifier circuit consists of _____ diode

A. 1

B. 200%

C. 300%

D. 400%

30 In which rectifier ripple factor is less

A. full wave

B. half wave

ELECTRONICS

- C. both a) and b)
 D. none of them

31 A half wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

- A. 100 Hz
 B. 25 Hz
 C. 200Hz
D. 50Hz

32 Rectifier is a device which converts

- A.AC to DC**
 B.DC to AC
 C.AC to triangular current
 D.DC to triangular current

33 Which of the following rectifier uses wheatstone bridge to rectify signal

- A. half wave
 B. full wave
C. bridge
 D. All of the above

34 In which rectifier ripple factor is less

- A. full wave**
 B. half wave
 C. both a) and b)
 D. none of them

35 For a half-wave rectifier having diode voltage V_D and supply input of V , the diode conducts for $\pi - 2\theta$, where θ is given by

- A. $\tan^{-1}(V_D/V)$
B. $\sin^{-1}(V_D/V)$
 C. $\cos^{-1}(V_D/V)$
 D. $\cot^{-1}(V_D/V)$

36 The principle behind the working of cathode ray oscilloscope is

- A. oscillation
B. half wave rectification
 C. full wave rectification
 D. none of these

37 Average dc Voltage across the load in terms of V_{max} is

- A. $0.532 V_{max}$
B. $0.637 V_{max}$
 C. $0.759 V_{max}$

- D. $0.437 V_{max}$

38 Consider a peak rectifier fed by a 60-Hz sinusoid having a peak value $V_p = 100$ V. Let the load resistance $R = 10$ k Ω . Calculate the fraction of the cycle during which the diode is conducting

- A. 1.06 %
 B. 2.06%
C. 3.18 %
 D. 4.82%

39 The bridge rectifier is preferred to an ordinary two diode full wave rectifier because

- A. it needs much smaller transformer for the same output
 B. no center tap required
 C. less PIV rating per diode
D. All of the above

40 In a centre tap full wave rectifier if V_m is the peak voltage across the secondary of transformer, the maximum voltage across reverse bias is

- A. V_m
 B. $V_m/\sqrt{2}$
C. $2V_m$
 D. $V_m/3$

41 Half wave rectifier uses

- A. one diode**
 B. two diode
 C. three diodes
 D. Four diodes

42 Half wave rectifier passes only

- A. lower half cycle
B. upper half cycle
 C. both cycles
 D. none of them

43 The bridge rectifier is preferred to an ordinary two diode full wave rectifier because

- A. it needs much smaller transformer for the same output
 B. no center tap required
 C. less PIV rating per diode
D. All of the above

ELECTRONICS

44 In a rectifier, larger the value of shunt capacitor filter

- A. larger the peak-to-peak value of ripple voltage
- B. larger the peak current in the rectifying diode
- C. longer the time that current pulse flows through the diode**
- D. smaller the dc voltage across the load

45 If the line frequency is 50 Hz, the output frequency of bridge rectifier is

- A. 50Hz
- B. 100Hz**
- C. 200Hz
- D. 150Hz

46 The use of a capacitor filter in a rectifier circuit gives satisfactory performance only when the load

- A. Current is high
- B. Current is low**
- C. Voltage is high
- D. Voltage is low

47 Which of the following is a type of rectifier

- A. half wave
- B. full wave
- C. bridge
- D. All of the above**

48 Ripple factor of half wave rectifier is

- A. 1.21**
- B. 0.8
- C. 0.6
- D. 0.4

49 Half wave rectifier passes only

- A. lower half cycle
- B. upper half cycle**
- C. both cycles
- D. none of them

50 A full wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

- A. 100 Hz**
- B. 25Hz
- C. 50Hz
- D. 200Hz

51 Which of the following is not a type of rectifier?

- A. Phase wave rectifier**

B. Full wave

C. half wave

D. none of them

52 Rectifier is a device which converts

- A. AC to DC**
- B. DC to AC
- C. AC to triangular current
- D. DC to triangular current

53 In full wave rectifier with input frequency 50 Hz the ripple in the output is mainly of frequency

- A. 25 Hz
- B. 50Hz
- C. 100Hz**
- D. Zero

54 Ripple factor of full wave rectifier is

- A. 1.21
- B. 0.6
- C. 0.482**
- D. 0.9

55 In a centre tap full wave rectifier if V_m is the peak voltage across the secondary of transformer, the maximum voltage across reverse bias is

- A. V_m
- B. $V_m/\sqrt{2}$
- C. $2V_m$**
- D. $V_m/3$

56 The output voltage of a rectifier is

- A. smooth
- B. pulsating**
- C. perfectly direct
- D. alternating

57 In a half wave rectification, during negative cycle of the wave the diode is

- A. reversed biased**
- B. forward biased
- C. potential barrier
- D. none of these

58 The number of diodes in bridge rectifier is

- A. 4**
- B. 3
- C. 2
- D. 5

59 If a half wave rectifier is used to convert 50Hz AC into DC, then the number of pulses present in rectifier voltage is

- A. 25

ELECTRONICS

B. 50

C. 100

D. 75

60 Centre tape rectifier circuit consists of _____ diode

A. 1

B. 200%

C. 300%

D. 400%

61 Which of the following are component of half wave rectifier

A. transformer

B. load resistance

C. power supply

D. All of the above

62 In which rectifier ripple factor is less

A. full wave

B. half wave

C. both a) and b)

D. none of them

63 The basic purpose of filter is to

A. minimize variation in ac signal

B. suppress harmonics in rectified output

C. remove ripples from the rectified output

D. stabilize dc output voltage

64 A full wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

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B. 25Hz

C. 50Hz

D. 200Hz

65 The principle behind the working of cathode ray oscilloscope is

A. oscillation

B. half wave rectification

C. full wave rectification

D. none of these

66 Ripple factor is defined as

A. I_{rms}/V_{rms}

B. I_{dc}/I_{rms}

C. I_{rms}/I_{dc}

D. $I_{rms} + I_{dc}$

67 Half wave rectifier passes only

A. lower half cycle

B. upper half cycle

C. both cycles

D. none of them

68 Non-inverting amplifier circuits have

A. A very high input impedance

B. A very low input impedance

C. A low output impedance

D. None of the above

69 A circuit that adds positive or negative dc voltage to an input sine wave is called

A. Clamper

B. clipper

C. diode clamp

D. limiter

70 The basic reason why a full wave rectifier has twice efficiency than half wave rectifier because

A. it uses transformer

B. its ripple factor is much less

C. it uses both cycle as input

D. Output frequency is double the line frequency

71 Most widely used rectifier is

A. half wave rectifier

B. full wave rectifier

C. bridge rectifier

D. none of them

72 In a rectifier, larger the value of shunt capacitor filter

A. larger the peak-to-peak value of ripple voltage

B. larger the peak current in the rectifying diode

C. longer the time that current pulse flows through the diode

D. smaller the dc voltage across the load

73 Rectifier is a device which converts

A. AC to DC

B. DC to AC

C. AC to triangular current

D. DC to triangular current

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A. 4

B. 3

C. 2

D. 5

75 In a centre tap full wave rectifier if V_m is the peak voltage across the secondary of transformer, the maximum voltage across reverse bias is

A. V_m

ELECTRONICS

B. $V_m/\sqrt{2}$

C. $2V_m$

D. $V_m/3$

76 To get a peak load voltage of 40V out of a bridge rectifier, what should be the approximate rms value of secondary voltage?

A. 0V

B. 14.4V

C. 28.3V

D. 56.6 V

77 If the line frequency is 50 Hz, the output frequency of bridge rectifier is

A. 50Hz

B. 100Hz

C. 200Hz

D. 150Hz

78 Ripple factor of full wave rectifier is

A. 1.21

B. 0.6

C. 0.482

D. 0.9

79 Half wave voltage multiplier can provide any degree of voltage multiplication by cascading diodes and capacitors.

A. any doubler

B. any tripler

C. any multiplication

D. none of them

80 If peak Voltage across a full wave rectifier is 20V then V_{rms} is

A. 7.07

B. 14.14 v

C. 16.8V

D. 12V

81 In full wave rectifier with input frequency 50 Hz the ripple in the output is mainly of frequency

A. 25 Hz

B. 50Hz

C. 100Hz

D. 40Hz

82 Transistors can be used as

A. half wave rectifier

B. full wave rectifier

C. both

D. none of these

83 In half wave rectification, the output DC voltage is obtained across the load for

A. the positive half cycle of input AC

B. the negative half cycle of input AC

C. the positive and negative half cycles of input AC

D. Either positive or negative half cycle of input AC

84 diode works in _____ bias for rectification

A. forward

B. reverse

C. mid

D. positive

85 Half wave rectifier uses

A. one diode

B. two diode

C. three diodes

D. Four diodes

86 Which of the following rectifier uses wheatstone bridge to rectify signal

A. half wave

B. full wave

C. bridge

D. All of the above

87 Consider a peak rectifier fed by a 60-Hz sinusoid having a peak value $V_p = 100$ V. Let the load resistance $R = 10$ k Ω . Calculate the fraction of the cycle during which the diode is conducting

A. 1.06 %

B. 2.06%

C. 3.18 %

D. 4.82%

88 The process of converting alternating current to direct current is called

A. modulation

B. amplification

C. oscillation

D. rectification

89 Ripple factor of half wave rectifier is

A. 1.21

B. 0.8

C. 0.6

D. 0.4

90 A full wave rectifier uses load resistor of 1500 Ω . Assume the diodes have $R_f = 10\Omega$, $R_r = \infty$. The

ELECTRONICS

voltage applied to diode is 30V with a frequency of 50Hz. Calculate the AC power input

- A. 358.98mW
- B. 275.2 mW**
- C. 145.76 mW
- D. 456.78 mW

91 Which of the following is a type of rectifier

- A. half wave
- B. full wave
- C. bridge**
- D. All of the above**

92 Transformer is used in rectification to _____ the supply voltage

- A. step up
- B. step down**
- C. equalize
- D. none of them

93 Most widely used rectifier is

- A. half wave rectifier
- B. full wave rectifier
- C. bridge rectifier**
- D. none of them

94 Transistors can be used as

- A. half wave rectifier
- B. full wave rectifier
- C. both
- D. none of these**

95 In a half wave rectification, during negative cycle of the wave the diode is

- A. reversed biased**
- B. forward biased
- C. potential barrier
- D. none of these

96 In a bridge type full wave rectifier, if V_m is the peak voltage across the secondary of the transformer, the maximum voltage coming across each reverse biased diode is

- A. V_m**
- B. $V_m/\sqrt{2}$
- C. $2V_m$
- D. $V_m/3$

97 Rectifier is a device which converts

A. AC to DC

- B. DC to AC
- C. AC to triangular current
- D. DC to triangular current

98 Ripple factor is defined as

- A. I_{rms}/V_{rms}
- B. I_{dc}/I_{rms}
- C. I_{rms}/I_{dc}**
- D. $I_{rms} + I_{dc}$

99 The process of converting alternating current to direct current is called

- A. modulation
- B. amplification
- C. oscillation
- D. rectification**

100 In half wave rectification, the output DC voltage is obtained across the load for

- A. the positive half cycle of input AC
- B. the negative half cycle of input AC
- C. the positive and negative half cycles of input AC
- D. Either positive or negative half cycle of input**

101 A full wave rectifier passes _____ into positive cycles

- A. lower half cycle
- B. upper half cycle
- C. both cycles**
- D. none of them

102 Rectifier is a device which converts

- A. AC to DC**
- B. DC to AC
- C. AC to triangular current
- D. DC to triangular current

103 Half wave rectifier passes only

- A. lower half cycle**
- B. upper half cycle**
- C. both cycles
- D. none of them

ELECTRONICS

104 Half wave voltage multiplier can provide any degree of voltage multiplication by cascading diodes and capacitors.

- A. any doubler
- B. any tripler
- C. any multiplication**
- D. none of them

105 In a half wave rectification, during negative cycle of the wave the diode is

- A. reversed biased**
- B. forward biased
- C. potential barrier
- D. none of these

106 The output voltage of a rectifier is

- A. smooth
- B. pulsating**
- C. perfectly direct
- D. alternating

107 In which rectifier ripple factor is less

- A. full wave**
- B. half wave
- C. both a) and b)
- D. none of them

108 A half wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

- A. 100 Hz
- B. 25 Hz
- C. 200Hz
- D. 50Hz**

109 Consider a peak rectifier fed by a 60-Hz sinusoid having a peak value $V_p = 100$ V. Let the load resistance $R = 10$ k Ω . Calculate the fraction of the cycle during which the diode is conducting

- A. 1.06 %
- B. 2.06%
- C. 3.18 %**
- D. 4.82%

110 Which of the following is not a type of rectifier?

- A. Phase wave rectifier**
- B. Full wave

- C. half wave
- D. none of them

111 In full wave rectifier with input frequency 50 Hz the ripple in the output is mainly of frequency

- A. 25 Hz
- B. 50Hz
- C. 100Hz**
- D. Zero

112 If a half wave rectifier is used to convert 50Hz AC into DC, then the number of pulses present in rectifier voltage is

- A. 25
- B. 50**
- C. 100
- D. 75

113 Centre tape rectifier circuit consists of _____ diode

- A. 1
- B. 200%**
- C. 300%
- D. 400%

114 The basic purpose of filter is to

- A. minimize variation in ac signal
- B. suppress harmonics in rectified output
- C. remove ripples from the rectified output**
- D. stabilize dc output voltage

115 Ripple factor is defined as

- A. I_{rms}/V_{rms}
- B. I_{dc}/I_{rms}
- C. I_{rms}/I_{dc}**
- D. $I_{rms} + I_{dc}$

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- A. smooth
- B. pulsating**
- C. perfectly direct
- D. alternating

117 Which of the following is not a type of rectifier?

- A. Phase wave rectifier**
- B. Full wave

ELECTRONICS

- C. half wave
D. none of them

118 Half wave rectifier passes only

- A. lower half cycle
B. upper half cycle
C. both cycles
D. none of them

119 The bridge rectifier is preferred to an ordinary two diode full wave rectifier because

- A. it needs much smaller transformer for the same output
B. no center tap required
C. less PIV rating per diode
D. All of the above

120 A half wave rectifier is operating from 50 Hz mains. Fundamental frequency of ripple will be

- A. 100 Hz
B. 25 Hz
C. 200 Hz
D. 50 Hz

121 Centre tap rectifier circuit consists of diode

- A. 1
B. 200%
C. 300%
D. 400%

122 The maximum efficiency of full wave rectifier is

- A. 80.60%
B. 40.60%
C. 70%
D. 50%

123 Half wave voltage multiplier can provide any degree of voltage multiplication by cascading diodes and capacitors.

- A. any doubler
B. any tripler
C. any multiplication
D. none of them

124 Transformer is used in rectification to _____ the supply voltage

- A. step up
B. step down
C. equalize
D. none of them

125 Most widely used rectifier is

- A. half wave rectifier
B. full wave rectifier
C. bridge rectifier
D. none of them

126 Half wave rectifier has _____ diodes

- A. 1
B. 2
C. 3
D. 4

127 In half wave rectification, the output DC voltage is obtained across the load for

- A. the positive half cycle of input AC
B. the negative half cycle of input AC
C. the positive and negative half cycles of input AC
D. Either positive or negative half cycle of input

128 The process of converting alternating current to direct current is called

- A. modulation
B. amplification
C. oscillation
D. rectification

129 Half wave rectifier uses

- A. one diode
B. two diode
C. three diodes
D. Four diodes

130 Which of the following is not a type of rectifier?

- A. Phase wave rectifier
B. Full wave
C. half wave
D. none of them

ELECTRONICS

131 A diode works in _____ bias for rectification

A.forward

B.reverse

C.mid

D.positive

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DAWN OF MODERN PHYSICS

1 The ratio of period of excitation in ordinary and metastable state is

- A. 4:10⁻⁸
- B. 1:10⁻⁸
- C. 1:10⁵**
- D. All of these

2 What will be the photon energy for a wavelength of 5000 angstroms, if the energy of a photon corresponding to a wavelength of 7000 angstroms is 4.23×10^{-19} J?

- A. 0.456 eV
- B. 5.879 eV
- C. 3.701 eV**
- D. 1.6×10^{-19} eV

3 Gamma rays travel ____ distance

- A. long
- B. short**
- C. absorbed immediately
- D. never ending distance

4 Galilean transformations are applicable in :

- A. All frames**
- B. frame of reference
- C. Non-Inertial frame
- D. Inertial frame

5 In annihilation process..... are produced :

- A. Positron
- B. Photons**
- C. Electrons
- D. B & C are correct

6 In case of spectrometer circular scale, graduated in half degree, is attached with

- A. Telescope
- B. Turntable**
- C. Cross wire of telescope
- D. None of these

7 Wave theory of light is unable to prove

- A. Black body radiation
- B. Photoelectric effect
- C. Compton effect**
- D. All of them

8 In annihilation process..... are produced :

- A. Positron
- B. Photons**
- C. Electrons
- D. B & C are correct

9 Beta particle is actually a

- A. fast moving electron**
- B. slow moving electron
- C. electron at rest
- D. none of these

10 X-ray is the reverse process of :

- A. Pair production
- B. Compton effect
- C. Photoelectric effect**
- D. A & B are correct

11 The linear momentum of a 3 MeV photon is :

- A. 0.01 eV s m^{-1}**
- B. 0.01 eV s m^{-1}
- C. 0.03 eV s m^{-1}
- D. 0.04 eV s m^{-1}

12 Polarization explains light is

- A. electric in nature
- B. magnetic in nature
- C. both a & B**
- D. none of these

13 Momentum of a photon is

- A. 0
- B. α
- C. $h\nu/c$**
- D. mv

14 When electron strikes with Al plate which photon is emitted

- A. blue
- B. white
- C. purple
- D. none of these**

15 Beta rays cannot be stopped by

- A. paper
- B. water
- C. air

DAWN OF MODERN PHYSICS

D. all of these

16 gamma rays are attracted towards

- A. negative plate
- B. positive plate
- C. no deflection

D. pass through the medium

17 Identify the de Broglie expression from the following.

- A. $\lambda = h \times p$
- B. $\lambda = h/p$**
- C. $\lambda = h + p$
- D. $\lambda = h - p$

18 Michelson determined velocity of light by

- A. studying rotation of moon and sun
- B. using interferometer
- C. using a rotating plane mirror

D. using an octagonal rotating mirror

19 If two photons interact in same direction what will change

- A. mass
- B. energy
- C. intensity**
- D. none of these

20 Where does the energy lost by fast moving electron goes :

- A. Appears as photon**
- B. Appears as electron - positron pair
- C. Appears as its K.E.
- D. It vanishes

21 Charge of photon is

- A. 0**
- B. positive
- C. negative
- D. positive/negative

22 x-rays can be deflect by

- A. electric field
- B. magnetic field
- C. both a & B

D. none of these

23 Pair production is possible in ____ Photon

A. x rays

B. beta rays

C. gamma rays

D. all of these

24 Black body radiations are :

A. Infrared and visible light rays

B. All radiations

C. Visible light and ultraviolet rays

D. Ultraviolet and X-rays

25 The energy of electron in nth orbit of Hydrogen atom is

- A. -0.0136 eV
- B. -1.136 eV
- C. 0.136 eV

D. None of these

26 The reverse process of pair production is known as :

A. Annihilation of energy

B. Anti Pair production

C. materialization of matter

D. Annihilation of practical into its antiparticle

27 Among the following four spectral regions, in which of them, the photon has the highest energy in?

- A. infrared
- B. violet
- C. blue

D. ultraviolet

28 In wave motion the least distance between two points which are out of phase is

- A. λ
- B. 3λ
- C. 4λ

D. $\lambda/2$

29 The sun gives light at the rate of 1500 W/m^2 of area perpendicular to the direction of light.

Assume the wavelength of light as 5000 \AA .

Calculate the number of photons/s arriving at 1 m^2 area at that part of the earth.

- A. 4.770×10^{21}
- B. 3.770×10^{11}

DAWN OF MODERN PHYSICS

C. 3.770×10^{21}

D. 3.770×10^{22}

30 The maximum velocity of SHM is a_0 the period of oscillation is

A. $2\pi a_0 / a_0$

B. $2\pi a_0 \cdot x_0$

C. $2\pi a_0 \cdot x_0$

D. $2\pi / a_0 x_0$

31 Numbers of photon electrons emitted from metal depends upon :

A. Intensity of incident light

B. Energy of incident light

C. Wavelength of incident light

D. Frequency of incident light

32 What is the frequency of a photon whose energy is 66.3 eV

A. 12.6×10^6 Hz

B. 19.6×10^6 Hz

C. 1.6×10^{16} Hz

D. 81.6×10^6 Hz

33 What will be the de – Broglie wavelength when the kinetic energy of the electron increases by 5 times?

A. $\sqrt{5}$

B. 5

C. $1/\sqrt{5}$

D. $1/5$

34 What is the de Broglie wavelength of a ball of mass 150g moving at a speed of 50 m/s?

A. 8.8×10^{-34} m

B. 8.8×10^{-35} m

C. 8.8×10^{-20} m

D. 8.8×10^{-25} m

35 In compton 'scattering process , wavelength of scattered X-rays :

A. Remains same

B. Increases

C. Decreases

D. None of these

36 Range of wavelength of visible light is :

A. $700^\circ \text{A} - 1000^\circ \text{A}$

B. 1nm - 100nm

C. 0.1nm - 1nm

D. $4000^\circ \text{A} - 7000^\circ \text{A}$

37 The x-ray photon is uncertain when it is

A. emitted

B. absorbed

C. traveling

D. all of these

38 The momentum of white light is ____ than x rays

A. less

B. high

C. equal

D. none of these

39 Wave nature and particle nature of photon is linked by :

A. Rest mass of photon

B. Wavelength of photon

C. Light speed

D. Momentum of photon

40 In medical scanning _____ rays are used

A. photon

B. γ

C. beta

D. white

41 The black body which is close to perfect body is :

A. Translucent glass box

B. Cavity Radiator

C. Black holes

D. All of these

42 Calculate the energy of a photon of wavelength 6600 angstroms.

A. 0.3×10^{-19} J

B. 3×10^{-19} J

C. 30×10^{-19} J

D. 300×10^{-19} J

43 x-rays images are detected on ____ screen

A. Phosphorous

B. carbon

DAWN OF MODERN PHYSICS

- C. sodium
 D. helium

44 If a nucleus release gamma rays its mass become

- A. double
 B. half
C. unchanged
 D. quarter

45 In subatomic world things can be predicted with _____ precision

- A. 1
B. less than 1
 C. absolutely no
 D. none of these

46 The concept of work function was given by

- A. Bohr
B. Einstein
 C. Rutherford
 D. none of these

47 white light gives spectrum after occurring

- A. diffraction**
 B. interference
 C. reflection
 D. all of these

48 x-rays are used to investigate

- A. crystals**
 B. molecules
 C. ions
 D. electrons

49 In stretched string the frequency of vibration is given by $f = \frac{1}{2L} \sqrt{F/m}$. In this equation m has dimension

- A. ML-2
 B. ML-1
C. M
 D. ML

50 If a nucleus with 198 atomic mass release alpha particle its new mass become

- A. 194**
 B. 202

- C. 200
 D. None of these

51 Wave particle duality does not explain

- A. momentum
B. frequency
 C. mass
 D. all of these

52 The frequency of the incident photon after compton effect will :

- A. remain constant
 B. Increases
C. Decreases
 D. None of these

53 A beam of electrons can

- A. reflect
 B. refract
C. both
 D. none of these

54 Existence of photon was confirmed by:

- A. Compton**
 B. De ' broglie
 C. Einstein
 D. Max planck

55 Which principle is used in solar cells?

- A. momentum**
 B. charge
 C. mass
 D. all of these

56 When white light is used in Double Slit experiment then

- A. non interference fringes observed
 B. only central bright fringe is observed
 C. only red and white fringes are observed
D. central bright and few coloured fringes are

57 Platinum wire becomes yellow at a temperature of _____ degree C.

- A. 900
 B. 500
C. 1300
 D. 1600

DAWN OF MODERN PHYSICS

58 Radiation can cause

- A. burning
- B. cancer
- C. flu
- D. all of these**

59 The wavelength of matter wave is independent of :

- A. Mass
- B. Velocity
- C. kinetic energy
- Charge**

60 Numbers of electrons emitted in photoelectric effect depends upon

- A. wavelength of incident light
- B. frequency of incident light
- C. energy of incident light
- D. intensity of incident light**

61 For atomic spectra, atomic gas or vapor at pressure which is much ____ than atmospheric pressure is excited

- A. greater
- B. greater than equal to
- C. less**
- D. none of these

62 Numbers of electrons emitted in photoelectric effect depends upon

- A. wavelength of incident light
- B. frequency of incident light
- C. energy of incident light
- D. intensity of incident light**

63 What will be the photon energy for a wavelength of 5000 angstroms, if the energy of a photon corresponding to a wavelength of 7000 angstroms is 4.23×10^{-19} J?

- A. 0.456 eV
- B. 5.879 eV
- C. 3.701 eV**
- D. 1.6×10^{-19} eV

64 Which light photon has the least momentum

- A. red**

- B. green
- C. yellow
- D. blue

65 The photon when scattered from mirror its momentum becomes

- A. double**
- B. half
- C. remain same
- D. zero

66 From the following properties of a wave, the one that is independent of the other is its

- A. Amplitude**
- B. Frequency
- C. Wavelength
- D. Time period

67 x-rays can be deflect by

- A. electric field
- B. magnetic field
- C. both a & B
- D. none of these**

68 Which principle is used in solar cells?

- A. momentum
- B. charge
- C. mass
- D. all of these**

69 The linear momentum of a 3 MeV photon is :

- A. 0.01 eV s m^{-1}**
- B. 0.01 eV s m^{-1}
- C. 0.03 eV s m^{-1}
- D. 0.04 eV s m^{-1}

70 In pair production..... are produced :

- A. positron & electron**
- B. Photons
- C. Electron & neutron
- D. B & C are correct

71 Which among the following phenomenon shows particle nature of light?

- A. Photoelectric effect**
- B. Interference
- C. Polarization

DAWN OF MODERN PHYSICS

D. Matter waves

72 Which light photon has the least momentum

A. red

B. green

C. yellow

D. blue

73 Wave particle duality does not explain

A. momentum

B. frequency

C. mass

D. all of these

74 Which principle is used in solar cells?

A. momentum

B. charge

C. mass

D. all of these

75 The electron is purely a _____ when free

A. particle nature

B. wave nature

C. dual nature

D. it transform to photon

76 In medical scanning _____ rays are used

A. photon

B. x

C. beta

D. white

77 x-rays are used to investigate

A. crystals

B. molecules

C. ions

D. electrons

78 Galilean transformations are applicable in :

A. All frames

B. frame of reference

C. Non-Inertial frame

D. Inertial frame

79 Which among the following shows the particle nature of light?

A. Interference

B. Reflection

C. polarization

D. Photoelectric effect

80 In compton 'scattering process , wavelength of scattered X-rays :

A. Remains same

Increases

C. Decreases

D. None of these

81 In subatomic world things can be predicted with _____ precision

A. 1

B. less than 1

C. absolutely no

D. none of these

82 Inertial frame has :

A. Constant velocity

B. Zero velocity

C. Zero acceleration

D. All of these

83 The linear momentum of a 3 MeV photon is :

A. 0.01 eV s m^{-1}

B. 0.01 eV s m^{-1}

C. 0.03 eV s m^{-1}

D. 0.04 eV s m^{-1}

84 The photon is the particle , which has :

A. Infinite rest mass

B. Rest mass but no charge

C. No rest mass & no charge

D. A & C are correct

85 x-rays can be deflect by

A. electric field

B. magnetic field

C. both a & B

D. none of these

86 _____ is conserved in pair production

A. charge

B. momentum

C. both a & B

D. none of these

DAWN OF MODERN PHYSICS

87 What is the de Broglie wavelength associated with an electron, accelerated through a potential difference of 200 volts?

- A. 1nm
- B. 0.5nm
- C. 0.0056 nm
- D. 0.086 nm**

88 In stationary waves

- A. Strain is maximum at antinodes
- B. Strain is minimum at nodes
- C. Strain is maximum at node**
- D. Amplitude is same at all points

89 Which light photon has the least momentum

- A. red**
- B. green
- C. yellow
- D. blue

90 The maximum velocity of SHM is a0 the period of oscillation is

- A. $2\pi \times 0 \ a0$
- B. $2\pi a0 \ x0$
- C. $2\pi a0 \ x0$
- D. $2\pi/a0 \ x0$**

91 Gamma rays travel ____ distance

- A. long**
- B. short**
- C. absorbed immediately
- D. never ending distance

92 The electron is purely a ____ when free

- A. particle nature
- B. wave nature
- C. dual nature**
- D. it transform to photon

93 The electron is purely a ____ when free

- A. particle nature
- B. wave nature
- C. dual nature**
- D. it transform to photon

94 Planck's constant is analogous to :

- A. Inertia
- B. Wave nature
- C. Angular momentum**
- D. Linear momentum

95 The concept of work function was given by

- A. Bohr
- Einstein**
- C. Rutherford
- D. none of these

96 The bound state electron have

- A. wave nature
- B. particle nature
- C. dual nature**
- D. it never moves when in bound state

97 Beta particle is actually a

- A. fast moving electron**
- B. slow moving electron
- C. electron at rest
- D. none of these

98 In case of spectrometer circular scale, graduated in half degree, is attached with

- A. Telescope
- B. Turntable**
- C. Cross wire of telescope
- D. None of these

99 The wavelength of matter wave is independent of :

- A. Mass
- B. Velocity
- C. kinetic energy
- D. Charge**

100 Range of wavelength of visible light is :

- A. $700^\circ \text{A} - 1000^\circ \text{A}$
- B. 1nm - 100nm
- C. 0.1nm - 1nm
- D. $4000^\circ \text{A} - 7000^\circ \text{A}$**

101 The bound state electron have

- A. wave nature
- B. particle nature
- C. dual nature**
- D. it never moves when in bound state



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DAWN OF MODERN PHYSICS

102 Which among the following shows the particle nature of light?

- A. Interference
- B. Reflection
- C. polarization
- D. Photoelectric effect

103 Polarization explains light is

- A. electric in nature
- B. magnetic in nature
- C. both a & B
- D. none of these

104 Pair production is possible in ____ Photon

- A. x rays
- B. beta rays
- C. gamma rays
- D. all of these

105 Work function depends on:

- A. Metals only
- B. Nature of surface only
- C. Both metals and nature of surface
- D. Threshold frequency

106 Wave nature of light is proved by :

- A. Polarisation
- B. Black body radiation
- C. Compton 's effect
- D. Photoelectric effect

107 Minimum energy required for pair production is :

- A. 939 MeV
- B. 942 MeV
- C. 1.02MeV
- D. 0.511MeV

108 The fast moving electrons stopped by a heavy metallic target in an evacuated glass tube, give rise to the production of:

- A. α - particles
- B. X-rays
- C. Laser
- D. β - particles

109 Nucleus absorbs

- A. x rays
- B. beta rays
- C. gamma rays
- D. all of these

110 As a result of interference, energy

- A. is transmitted and reflected
- B. is lost
- C. remains unchanged as a whole but is redistributed
- D. is gained

111 Energy of photon is directly proportional to its :

- A. Temperature
- B. Frequency
- C. Wave length
- D. None of the above

112 Which of the following statements is incorrect about the photons

- A. Momentum of photon h/λ
- B. Rest mass of photon is zero
- C. photon exert no pressure
- D. Energy of photon is $h\nu$

113 Two waves interfere constructively, if the path difference between them is

- A. $(2n + 1) \lambda$
- B. $(2n + 1) \lambda/2$
- C. $(2n + 1) \lambda/3$
- D. None of these

114 Photocell is similar to

- A. photoelectric effect
- B. compton effect
- C. photoluminescence
- D. none of these

115 The final image produced by electron microscope can be seen

- A. on electron micrograph
- B. scanning micrometer
- C. on fluorescent screen
- D. none of these

116 In annihilation process particles move in

- A. same direction
- B. opposite direction

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- C. perpendicular direction
 D. none of these

117 Phase difference between two particles of a medium lying between two consecutive nodes is:

- A. Zero
 B. $\pi/2$
 C. $\pi/4$
 D. π

118 A three dimensional image is achieved by scanning the surface with a focused beam of electrons

- A. SEM
 B. TEM
 C. XRD
 D. none of these

119 Photons of energy 10.25 eV fall on the surface of the metal emitting photoelectrons of maximum kinetic energy 5.0 eV. What is the stopping voltage required for these electrons?

- A. 10V
 B. 8V
 C. 5V
 D. 4V

120 The white laser cannot be produced because

- A. its is not coherent
 B. it has low energy
 C. it diffracts easily
 D. all of these

121 Planck's constant is analogous to :

- A. Inertia
 B. Wave nature
 C. Angular momentum
 D. Linear momentum

122 Joule - second is the unit of:

- A. Energy
 B. Heat
 C. Work
 D. Planck's constant

123 Spectrum from H atom is

- A. line
 B. continuous
 C. band
 D. none of these

124 What is the energy of a photon in a beam of infrared radiation of wavelength 1240 nm? Give your answer in eV.

- A. 1
 B. 6.25×10^{18}
 C. 1.6×10^{-19}
 D. 3.6×10^6

125 White rays can produce x-rays?

- A. TRUE
 B. FALSE
 C. May depend on some conditions
 D. none of these

126 Planck constant is named after

- A. Einstein
 B. newton's
 C. Maxwell
 D. none of these

127 Einstein was awarded Nobel Prize for his work on

- A. photoelectric effect
 B. nuclear fission
 C. theory of relativity
 D. all are correct

128 _____ is conserved in pair production

- A. charge
 B. momentum
 C. both a & B
 D. none of these

129 Which source is associated with a line emission spectrum

- A. electric signal

DAWN OF MODERN PHYSICS

B. neon street signal

C. red traffic light

130 The bound state electron have

A. wave nature

B. particle nature

C. dual nature

D. it never moves when in bound state

131 The ratio of period of excitation in ordinary and metastable state is

A. $4:10^{-8}$

B. $1:10^{-8}$

C. $1:10^5$

D. All of these

132 What will be the photon energy for a wavelength of 5000 angstroms, if the energy of a photon corresponding to a wavelength of 7000 angstroms is 4.23×10^{-19} J?

A. 0.456 eV

B. 5.879 eV

C. 3.701 eV

D. 1.6×10^{-19} eV

133 What will be the photon energy for a wavelength of 5000 angstroms, if the energy of a photon corresponding to a wavelength of 7000 angstroms is 4.23×10^{-19} J?

A. 0.456 eV

B. 5.879 eV

C. 3.701 eV

D. 1.6×10^{-19} eV

134 Which is not the result of special theory of relativity

A. Length contraction

B. Space - time transformation

C. Time dilation

D. Mass variation

135 The photon is the particle, which has :

A. Infinite rest mass

B. Rest mass but no charge

C. No rest mass & no charge

D. A & C are correct

136 Which source is associated with a line emission spectrum

A. electric signal

B. neon street signal

C. red traffic light

D. signal

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B. nuclear fission

C. theory of relativity

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D. 4V

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C. XRD

D. none of these

141 Phase difference between two particles of a medium lying between two consecutive nodes is:

A. Zero

B. $\pi/2$

C. $\pi/4$

D. π

NUCLEAR PHYSICS

1 Which element has three isotopes?

- A. H**
- B. O
- C. Cl
- D. none of these

2 The radius R of a nucleus is given by :

- A. $R = r_0 A^{-1/3}$
- B. $R = r_0 A^{1/3}$**
- C. $R = r_0 A^3$
- D. none of these

3 If a photon is absorbed by a nucleus the energy of nucleus

- A. remain same
- B. increase slightly**
- C. decrease slightly
- D. it will pass the nucleus

4 Find the probability that the nucleus of $^{87}\text{Ra}_{221}$ undergoes decay after three half-lives, if its a radioactive substance which has a half-life of 6 days.

- A. 1 6
- B. 3 2
- C. 5/6**
- D. $\frac{1}{2}$

5 Which element has three isotopes?

- A. H**
- B. O
- C. Cl
- D. none of these

6 The radius R of a nucleus is given by :

- A. $R = r_0 A^{-1/3}$
- B. $R = r_0 A^{1/3}$**
- C. $R = r_0 A^3$
- D. none of these

7 The Na atom cannot produce x-rays because

- A. inner shell transition is possible
- B. inner shell transition is not possible**
- C. it is non radioactive
- D. none of these

8 A radioactive decay rate of 3.7×10^{10} disintegrations per second defines the unit of measurement known as the

- A. Curie**
- B. rutherford
- C. rontgen
- D. Rad

9 What is the S.I. unit of radioactivity?

- A. Curie
- B. Rutherford
- C. Becquerel**
- D. all of these

10 In microwave ovens _____ is used to heat the food

- A. x-rays
- B. beta rays
- C. gamma rays
- D. electromagnetic rays**

11 When the nucleus of an unstable atom emits only gamma radiation, the nucleus must

- A. gain energy
- B. lose energy**
- C. lose protons
- D. gain protons

12 Ozone reflects _____ radiation from sun back into space

- A. IR
- B. UV**
- C. alpha
- D. all of these

13 Radon-222 has 136 neutrons, how many neutrons are there in Radon-220

- A. 131
- B. 134
- C. 136**
- D. none of these

14 The reason that white light is not harmful radiation is that

- A. its speed is less than other radiations**
- B. it is composed of different lights
- C. it is originated from non radioactive element
- D. none of these

NUCLEAR PHYSICS

15 1 rutherford is equal to

- A. 10^4 Bq
- B. 10^6 Bq**
- C. 10^7 Bq
- D. 10^5 Bq

16 An element X with Z 14 and A 6 has how many neutrons

- A. 6
- B. 8**
- C. 14
- D. 20

17 The down quark has charge

- A. $1/2^-$
- B. $1/2^+$
- C. $1/3^-$**
- D. $2/3^+$

18 The phenomenon of radioactivity is

- A. Nuclear process does not depend on external factors**
- B. increased on applied pressure
- C. exothermic change which increase and decrease with temperature
- D. none of these

19 How many down quarks in Neutron

- A. 1
- B. 2**
- C. 3
- D. 4

20 Uranium-238 forms thorium-234 after radioactive decay and has a half-life of 4.5×10^9 years. How many years will it take to decay 75% of the initial amount?

- A. 9×10^9 years**
- B. 4×10^9 years
- C. 9×10^{10} years
- D. 4×10^{10} years

21 The control rods in nuclear reactor controls the reaction by

- A. reducing the neutron speed**
- B. increasing the neutrons speed

- C. increasing the electron speed
- D. decreasing the electron speed

22 β^- decay means emission of electron from

- A. radioactive nucleus**
- B. innermost electron orbit
- C. a stable nucleus
- D. outer most electron orbit

23 The Ozone is a isotope of

- A. O
- B. H
- C. Cl
- D. none of these**

24 The half life of U-238 against alpha decay is 4.5×10^9 years. Find the activity of 1 kg of U-238?

- A. 2.4×10^{-4} Ci
- B. 3.34×10^{-4} Ci**
- C. 4.34×10^{-4} Ci
- D. 2.4×10^{-5} Ci

25 Sample of radioactive element with initial mass of 24 gm decayed to 3 gm in 36 minutes. How much of original sample remained after the first 12 minutes?

- A. 12 g**
- B. 6 g
- C. 2 g
- D. 8 g

26 Isotopes of an element have a different number of

- A. proton
- B. neutron**
- C. electron
- D. atom

27 What will happen in a time of 7 hours, if a radioactive substance has an average life of 7 hours?

- A. Half of the active nuclei decay
- B. less half of the active nuclei decay
- C. more than half of the active nuclei decay**
- D. total nuclei decay

28 The atomic mass unit is unit of

- A. distance
- B. mass**
- C. time
- D. none of these

NUCLEAR PHYSICS

29 _____ time is required for all the atoms to decay

- A. finite
- B. infinite**
- C. very short
- D. zero

31 Which of the following substances cannot be emitted by radioactive substances during their decay?

- A. protons**
- B. neutrinos
- C. helium nuclei
- D. electrons

32 When one electron strike with one proton both will

- A. attract**
- B. repel
- C. no effect
- D. annihilate

33 The ionization power of _____ ray is highest

- A. beta
- B. gama
- C. He-Ne laser
- D. none of these**

34 Three types of radioactive elements are emitted when unstable nuclei undergo radioactive decay. Which of the following is not one of them

- A. alpha
- B. beta
- C. gamma
- D. delta**

35 Radiations are classified by its _____ nature

- A. ionizing
- B. non ionizing
- C. both a and b**
- D. radiations cannot be classified

36 Which radiation is used in smoke detectors

- A. alpha**
- B. beta
- C. gamma
- D. all of these

37 Which metal is used to detect radioactivity

- A. heavy metal**
- B. mercury metal
- C. hydrogen gas
- D. none of these

38 The total mass of protium deuterium and tritium is _____ than three H atoms

- A. 3 neutrons**
- B. 3 protons
- C. 3 electrons
- D. none of these

39 Radioactive radiations are used to destroy

- A. healthy cells
- B. cancerous cells**
- C. bacteria
- D. damaged organs

40 A particle radioisotope has a half life of 5 days. In 15 days the probability of decay in percentage will be

- A. 67 %
- B. 87.5 %**
- C. 82.5 %
- D. 77 %

41 C^{14} decays with a half life of about 5800 years. In a sample of bone the ratio of C^{14} to C^{12} is found to be $1/4$ th of what it is in free air. This bone may belong to a period about X centuries ago, where X is nearest to:

- A. 2×58**
- B. 58
- C. $58/2$
- D. 3×58

42 _____ are such nuclei of an element that have the same atomic number Z, but have different mass number A

- A. isotopes**
- B. isobars
- C. isomers
- D. isotherms

43 The electron emitted in β – radiation originates from where?

- A. inner orbits of atom

NUCLEAR PHYSICS

- B. free electrons existing in nuclei
C. the decay of a neutron in a nuclei
 D. photon escaping from a nuclei

44 What will be the decay constant of 1 Curie sample of radioactive substance of mass 214, its half life is 26.8 min?

- A. 4.31×10^{-4}**
 B. 4.31×10^{-5}
 C. 4.31×10^5
 D. 0.431

- 45 Crop mutation is performed by
 A. high intense radiation
B. low intense radiation
 C. mutation is done without radiation
 D. none of these

46 The number of neutrons emerged out in a single nucleus during fission reaction are

- A. infinite
 B. zero
C. 3
 D. none of these

47 Iodine-131 is used to trace which cancer

- A. lungs
B. thyroid gland
 C. breast
 D. liver

48 Bones image is shown on x-ray photograph because x-rays can be

- A. transmitted through bones
 B. reflected by bones
C. absorbed by bones
 D. scattered by bones

49 Which rays are used to scan bones

- A. white rays
 B. beta rays
C. gamma rays
D. none of these

50 _____ is often used to cure skin cancer

- A. cobalt-60
 B. radon gas

- C. iodine-131
D. strontium-90

51 If $^{238}\text{Pu}_{94}$ decay an alpha particle the new atomic number and mass number are

- A. 234,90
B. 234,92
 C. 231,97
 D. none of these

52 After certain lapse of time, the fraction of radioactive polonium is found to be 12.5% of initial quantity. If the half life of polonium is 138 days, then duration of time lapse isdays

- A. 34.5
 B. 276
C. 414
 D. 125

53 The fission reaction is slow reaction

- A. TRUE
 B. FALSE
C. true when neutrons slows down
 D. any of these

54 The activity of a radioactive isotope decreases from 8000 to 10000 in 60 days. The half life of isotope will be

- A. 10 year
B. 20 years
 C. 30 years
 D. 40 years

55 Two spherical nuclei have mass number 216 and 64 with radius R_1 and R_2 respectively. The ratio of R_2/R_1 is

- A. 1.5**
 B. 2
 C. 2.5
 D. 3

56 A sample of radioactive element has a mass of 10 gm at an instant $t = 0$. The approximate mass of this element in the sample after two mean lives is

- A. 3.70 gm
 B. 6.30 gm
 C. 2.50 gm

NUCLEAR PHYSICS

D. 1.35 gm

57 The H atom has _____ quarks

- A. 1
- B. 2
- C. 3**
- D. 4

58 The half-life of radium is about 1600 years. Of 100 g of radium existing now, 25 g will remain unchanged after

- A. 2400 years
- B. 3200 years**
- C. 6400 years
- D. 4800 years

59 The number of protons in the nucleus is called _____ number

- A. atomic
- B. charge
- C. atomic or charge**
- D. neither atomic nor charge

60 The nuclear forces are considered as

- A. strong force**
- B. weak force
- C. electromagnetic force
- D. all of these

61 For skin cancer _____ is used

- A. phosphorus-32
- B. strontium-90
- C. both**
- D. none of these

62 In nuclear fission, 0.1% of mass is converted into energy. The energy released by the fission of 1 kg mass will be.....J

- A. 9×10^{19}
- B. 9×10^{17}
- C. 9×10^{16}
- D. 9×10^{13}**

63 The activity of a certain nuclei decreases to 15 % of its original value in 10 days. Find its half life?

- A. 2 days
- B. 2. days

C. 3.65 days

D. 4 days

64 The radius of atom is of the order of

- A. 10^{10} m
- B. 10^{-10} m**
- C. 10^{-14} m
- D. 10^{14} m

65 Half-life is measured by

- A. spectroscopic method
- B. Geiger muller counter**
- C. carbon dating
- D. all of these

66 If a photon is absorbed by a electron the energy of electron

- A. increase**
- B. decrease
- C. remain same
- D. another photon will be released by electron

67 Protons and neutrons are composed of smaller particles called

- A. Quarks**
- B. baryons
- C. bosons
- D. photons

68 A radioactive decay rate of 3.7×10^{10} disintegrations per second defines the unit of measurement known as the

- A. Curie**
- B. rutherford
- C. rontgen
- D. Rad

69 Which set of elements have three isotopes

- A. O, H**
- B. O, Cl
- C. Cl, Hg
- D. All of them

70 The _____ reaction is an example of renewable source of energy

- A. fission
- B. fusion

NUCLEAR PHYSICS

C. both a and b

D. none of these

71 The cosmic radiations are _____ energetic than gamma rays

A. highly

B. equally

C. less

D. none of these

72 The H atom cannot produce

A. alpha rays

B. beta rays

C. x-rays

D. none of these

73 Radon-222 has 136 neutrons, how many neutrons are there in Radon-220

A. 131

B. 134

C. 136

D. none of these

74 SI unit of equivalent dose is

A. gray

B. radiation

C. sievert

D. rem

75 The radiation hazards are due to

A. radioactive elements

B. non radioactive elements

C. any of a or b

D. there are no radiation hazards

76 Average life in terms of decay constant is

A. $1/\lambda$

B. λ^2

C. 2λ

D. $\ln 2/\lambda$

77 The anti particle of quark is _____

A. electrons

B. protons

C. neutrons

D. none of these

78 The isotope of $^{235}\text{U}_{92}$ has _____ number of neutrons

A. 141

B. 142

C. 143

D. 144

79 The half life of U-238 against alpha decay is 4.5×10^9 years. Find the activity of 1 kg of U-238?

A. 2.4×10^{-4} Ci

B. 3.34×10^{-4} Ci

C. 4.34×10^{-4} Ci

D. 2.4×10^{-5} Ci

80 The radiation hazards are due to

A. radioactive elements

B. non radioactive elements

C. any of a or b

D. there are no radiation hazards

81 Which element has three isotopes?

A. H

B. O

C. Cl

D. none of these

82 The atomic ratio between U-238 and U-234 in a sample is 1.8×10^4 . The half life of U-238 is 2.5×10^5 years. Find the half life of U-234.

A. 2.5×10^9 years

B. 2.5×10^8 years

C. 4.5×10^9 years

D. none of these

83 According to Bohr's principle, what is the relation between the principal quantum number and the radius of the orbit?

A. $r \propto n$

B. $r \propto 1/n$

C. $r \propto n^2$

D. $r \propto 1/n^2$

84 If crops are grown under greenhouse radiation the crops will

A. grow faster

B. grow slowly

C. burn immediately

D. none of these will happen

85 The source of gamma radiation is

A. outside nucleus

B. inside nucleus

C. electron transition

D. none of these

86 1 barn is a unit of area having the magnitude of:

A. 10^{-24} cm^2

B. 10^{-28} m^2

C. 10^{-24} m^2

D. none of these

87 A radioactive source has a half-life of 80 s. How long it will take to decay $7/8$ of the source?

NUCLEAR PHYSICS

- A. 10 sec
- B. 70 sec
- C. 240 sec**
- D. 640 sec

88 Which water is used to reduce the speed of fast moving neutrons

- A. Salty water
- B. Pure water
- C. heavy water**
- D. muddy water

89 The ionization power of ____ ray is highest

- A. beta
- B. gama
- C. He-Ne laser
- D. none of these**

90 In fusion reaction of sun which element isotopes are used

- A. O
- B. C
- C. U
- D. H**

91 In gold foil experiment incident radiation on gold nuclei were scattered by

- A. neutrons
- B. electrons
- C. nucleus**
- D. neutrons

92 If the radiation wavelength is recorded 2.3×10^{-4} m as half life of ^{14}C , the half life of element is ____ year

- A. 6000
- B. 5000
- C. 4000
- D. 3000**

93 What will happen in a time of 7 hours, if a radioactive substance has an average life of 7 hours?

- A. Half of the active nuclei decay
- B. Less half of the active nuclei decay
- C. More than half of the active nuclei decay**
- D. All active nuclei decay

94 The reason that white light is not harmful radiation is that

- A. its speed is less than other radiations**
- B. it is composed of different lights
- C. it is originated from non radioactive element
- D. none of these

95 The charge on electron is equal to

- A. proton**
- B. two protons
- C. two neutrons
- D. none of these

96 A nucleus emits an α -particle, followed by two β -particles. The final nucleus will be:

- A. an isotone of the original one
- B. an isotope of the original one.**
- C. an isobar of the original one.
- D. none of these

97 Which of the following substances cannot be emitted by radioactive substances during their decay?

- A. proton**
- B. neutrinos
- C. helium nuclei
- D. electrons

98 What is the maximum electron energy in neutron beta decay?

- A. 783 eV
- B. 783 KeV**
- C. 783 GeV
- D. 783 TeV

99 As mass number increases, which of the following does not change

- A. mass
- B. density**
- C. volume
- D. binding energy

100 The nucleus is made up of more neutrons than protons

- A. H
- B. O
- C. U**
- D. none of these

101 The half life of radioactive element is

- A. 0.693λ
- B. $0.693/\lambda$**

NUCLEAR PHYSICS

- C. $\lambda 0.693$
 D. $1/\lambda$

102 Absorbed dose D is defined as energy absorbed from ionization radiation per unit ____

- A. mass
 B. charge
 C. time
 D. area

103 Half life of radioactive element means

- A. full life decay
 B. quarter life decay
 C. half of decay
 D. all of these

104 If a person is irradiated accidentally by high radiation what immediate effects would be seen?

- A. skin burning
 B. high blood pressure
 C. fever
 D. any of these

105 Half life of Au-198 is 2.7 days. What will be the activity of 1 mg of Au-198?

- A. 120 Ci
 B. 200 Ci
 C. 240 Ci
 D. 280 Ci

106 The half life of a radioactive substance is 5 min. The amount of substance decayed in 20 min will be

- A. 93.75 %
 B. 6.25 %
 C. 25 %
 D. 75 %

107 Radiotherapy used in treatment of cancer usually use gamma-rays from

- A. copper-60
 B. cobalt-60
 C. gold
 D. silver

108 Numbers of neutrons present in a nucleus is given by

- A. $N = A + Z$
 B. $N = A - Z$

C. $N = A - Z$

D. $N = Z - A$

109 Sample of radioactive element with initial mass of 24 gm decayed to 3 gm in 36 minutes. How much of original sample remained after the first 12 minutes?

- A. 12 g
 B. 6 g
 C. 2 g
 D. 8 g

110 ____ are such nuclei of an element that have the same mass number A, but have different charge number Z

- A. isotopes
 B. isobars
 C. isomers
 D. isotherms

111 Isotopes of an element have a different number of

- A. proton
 B. neutron
 C. electron
 D. atom

112 What is the unit of decay constant?

- A. second
 B. minute
 C. hour
 D. $(\text{sec})^{-1}$

113 Which radiation is used in greenhouse effect

- A. UV
 B. IR
 C. x-rays
 D. gamma-rays

114 The artifacts and fossils are used to estimate ages by measured ____ content

- A. mineral
 B. chemical
 C. radioactive
 D. all of these

115 The existence of positron was discovered in the

- A. thermal radiation
 B. cosmic radiation

NUCLEAR PHYSICS

- C. electromagnetic radiation
 D. non-electromagnetic radiation

116 A sample of F-18 is used internally as a medical diagnostic tool to look for the effect of the positron decay ($T_{1/2} = 110$ min). How long does it take for 99 % of the F-18 to decay?

- A. 10.2 h
 B. 11.2 h
 C. 14.2 h
D. 12.2 h

117 Which is not radioactive?

- A. ozone
 B. hydrogen
 C. sodium
D. all of these

118 β^- decay means emission of electron from

- A. radioactive nucleus**
 B. innermost electron orbit
 C. a stable nucleus
 D. outer most electron orbit

119 The effect of nuclear bomb radiation lasts for

- A. few minutes
 B. few weeks
 C. few days
D. more than 90 Years

120 SI unit of absorbed dose is

- A. Gray**
 B. Roentgen
 C. Curie
 D. Rem

121 The charge on gamma rays is

- A. $1+$
 B. $1-$
 C. 0
D. none of these

122 A nucleus with $A=235$ splits into two nuclei of mass numbers in the ratio 1:2. The ratio of the radii of the new nuclei are :

- A. 1:02**
 B. 01:01.3
 C. 8:01

D. none of these

123 Atom is neutral because it has equal number of

- A. charge particles**
 B. uncharged particles
 C. neutrons
 D. all of these

124 If the nuclear radius of Al-27 is 3.6 fm, the approximate nuclear radius of Cu-64 in fermi is

- A. 1.2 gm
 B. 2.4 fm
 C. 3.6 fm
D. 4.8 fm

125 x-rays were discovered in

- A. nuclear bomb experiment
 B. chemical reaction experiment
C. scattering experiment
 D. none of these

126 Which one of the following statements is correct

- A. the mass of the nucleus must be less than the sum of the masses of the constituent neutrons and protons.**
 B. the mass of the nucleus must be equal to the sum of the masses of the constituent neutrons and protons.
 C. the mass of the nucleus must be greater than the sum of the masses of the constituent neutrons and protons.
 D. the mass of the nucleus must be equal to only the masses of the constituent neutrons.

127 The forces of friction causes

- A. excitations**
 B. de-excitations
 C. magnetization
 D. none of these

128 If ^{238}U decay two gamma particles the new atomic number will be

- A. ^{238}U**
 B. ^{234}U
 C. ^{237}U
 D. none of these

129 The deuterium atom has _____ quarks

- A. 3
B. 6

NUCLEAR PHYSICS

C. 9

D. 12

130 The process by which a heavy nucleus splits up into lighter nuclei is known as

A. fission

B. fusion

C. alpha-decay

D. a chain reaction

131 1 rutherford is equal to

A. 10^4 Bq

B. 10^6 Bq

C. 10^7 Bq

D. 10^5 Bq

132 The radioactive isotope of Carbon is

A. ^{12}C

B. ^{14}C

C. ^{10}C

D. none of these

133 For an unknown element X the wavelength recorded is 2.9×10^{-2} m, the half life of element is ____ years

A. 50

B. 100

C. 1000

D. none of these

134 If two particles collide with one anti particle the resultant will give

A. one particle, one anti particle

B. total annihilation

C. one antiparticle only

D. none of these

135 Radioactive material decays by simultaneous emission of two particles with respective half-lives 1620 and 810 years. The time, in years, after which one-fourth of the material remains?

A. 1080

B. 2430

C. 3240

D. 4860

136 The radius R of a nucleus is given by :

A. $R = r_0 A^{-1/3}$

B. $R = r_0 A^{1/3}$

C. $R = r_0 A^3$

D. none of these

137 The control rods in nuclear reactor controls the reaction by

A. reducing the neutron speed

B. increasing the neutrons speed

C. increasing the electron speed

D. decreasing the electron speed

138 The charge and mass of photon is

A. 0,0

B. $1+,0$

C. $1-,0$

D. 1,1

139 Centrifuge is used to purify

A. U

B. H

C. O

D. N

140 Total charge on any nucleus is

A. Ne

B. Wq

C. Ze

D. Ne

141 What will be the decay constant of substance whose half life is 1 hour. Give your answer in (sec^{-1}).

A. 0.693

B. 2494.8

C. 2294.8

D. 41.58

142 One isotope of Uranium is U-238. Any other isotope of Uranium must have

A. 146 protons

B. 92 protons

C. 92 neutrons

D. 146 neutrons

143 The quarks are fundamental particles

A. true in some cases

B. only spin up quarks

C. only spin down quarks

D. FALSE

144 What is the half-time of a radioactive sample (in minutes), if its mean life is 200 s?

A. 0.69 min

B. 2 min

C. 2.57 min

NUCLEAR PHYSICS

D. 2.31 min

145 Which reaction is endothermic

- A. fission
- B. fusion
- C. formation of gas
- D. none of these

146 Which of the following is the same for isotopes?

- A. neutrons
- B. protons
- C. electrons
- D. all of them

147 What is the S.I. unit of radioactivity?

- A. Curie
- B. Rutherford
- C. Becquerel
- D. all of these

148 Which element is used to absorb gamma radiations

- A. Co
- B. Cl
- C. Ni
- D. P

149 The core of earth is hot due to

- A. fission reactions
- B. fusion reactions
- C. frictional forces
- D. all of these

150 To start a fusion reaction, energy required is

- A. small
- B. large
- C. infinite
- D. zero

151 Whenever new nuclei are formed energy is

- A. absorbed
- B. released
- C. remain unchanged
- D. none of these

152 How many milligrams of tritium will remain after 49.2 years if the starting amount is 32 mg? The half-life of tritium is 12.3 years

A. 8mg

B. 2mg

C. 1mg

D. 4mg

153 the particle that possesses half integral spin has

- A. pion
- B. proton
- C. k-meson
- D. photon

154 Which isotope has highest momentum when moving with same velocity

- A. Protium
- B. deuterium
- C. tritium
- D. all of these have same momentum

155 T_1 and T_2 are the half lives of two radioactive elements of decay constant λ_1 and λ_2 respectively then the value of T_1/T_2 is.....

- A. $\lambda_2 - \lambda_1$
- B. $\lambda_1 - \lambda_2$
- C. λ_1 / λ_2
- D. λ_2 / λ_1

156 When deuterium and tritium fuse together they form

- A. atom
- B. U atom
- C. N atom
- D. He atom

157 The unstable atom means

- A. electrons are increasing
- B. protons are increasing
- C. neutrons are increasing
- D. any of these

The radiations all around us are called _____ radiations

- A. natural
- B. artificial
- C. both a or b
- D. no radiation is around us

158 The proton and antiproton collision will result

- A. scattering

NUCLEAR PHYSICS

- B. repulsion
 C. attraction
 D. **annihilation**

159 Nuclear force is :

- A. spin independent
 B. both charge and spin independent
 C. **spin dependent but charge independent**
 D. charge dependent

160 The deuterium atom has _____ quarks

- A. 3
 B. **6**
 C. 9
 D. 12

161 If alpha, beta, and gamma rays carry the same momentum, which has the longest wavelength?

- A. alpha rays
 B. beta rays
 C. gamma rays
 D. **all have same wavelength**

162 Isotopes means addition of additional _____ in same proton number

- A. protons
 B. electrons
 C. **neutrons**
 D. all of them

163 If alpha, beta, and gamma rays carry the same momentum, which has the longest wavelength?

- A. alpha rays
 B. beta rays
 C. gamma rays
 D. **all have same wavelength**

164 A radioactive sample with a half life of 1 month has the label : "Activity = 2 micro curies on 1.8.1991." What will be its activity two months later?

- A. 0.5 micro curies
 B. **8 micro curies**
 C. 1 micro curies
 D. 2 micro curies

165 C¹⁴ has half life 5700 years. At the end of 11400 years, the actual amount left is

- A. 0.0625 of original amount
 B. 0.5 of original amount
 C. **0.25 of original amount**
 D. 0.125 of original amount

166 Radon-222 has 136 neutrons, how many neutrons are there in Radon-220

- A. 131
 B. 134
 C. **136**
 D. none of these

167 If the nuclear radius of Al-27 is 3.6 fm, the approximate nuclear radius of Cu-64 in fermi is

- A. 1.2 fm
 B. 2.4 fm
 C. 3.6 fm
 D. **4.8 fm**

168 If the nuclear radius of Al-27 is 3.6 fm, the approximate nuclear radius of Cu-64 in fermi is

- A. 1.2 fm
 B. 2.4 fm
 C. 3.6 fm
 D. **4.8 fm**

169 The spin of quarks is

- A. 1
 B. 2
 C. **half**
 D. quarter

170 The fusion reaction is almost _____ times more stronger than fission reaction

- A. two times
 B. ten times
 C. hundred times
 D. **thousand times**

171 Radioactive material decays by simultaneous emission of two particles with respective half-lives 1620 and 810 years. What is the time, in years, after which one-fourth of the material remains?

- A. **2430 years**
 B. 1080 years
 C. 3240 years
 D. 4260 years

172 What is the atomic number and mass number of Helium?

- A. **A=4, Z=2**
 B. A=2 Z=4
 C. A=1 Z=1
 D. A=3, Z=1

NUCLEAR PHYSICS

173 If alpha, beta, and gamma rays carry the same momentum, which has the longest wavelength?

- A. alpha rays
- B. beta rays
- C. gamma rays
- D. all have same wavelength**

174 What is the fraction of atom left after 10 half life of a substance?

- A. $1/512$
- B. $1/1024$**
- C. $1/256$
- D. $1/2048$

175 How many quarks in electron

- A. 0**
- B. 1
- C. 2
- D. 3

176 What is the half-time of a radioactive sample (in minutes), if its mean life is 200 s?

- A. 0.69 min
- B. 2 min
- C. 2.57 min
- D. 2.31 min**

177 The half-life of a radioactive substance is 40 years. How long will it take to reduce to one fourth of its original amount and what is the value of decay constant?

- A. 40 year, 0.9173/year
- B. 80 year, 0.0173 year**
- C. 90 year, 9.017/year
- D. none of these

178 The half-life of radium is about 1600 years. Of 100 g of radium existing now, 25 g will remain unchanged after

- A. 2400 years
- B. 3200 years**
- C. 6400 years
- D. 4800 years

179 The half life of U-238 against alpha decay is 4.5×10^9 years. Find the activity of 1 kg of U-238?

- A. 2.4×10^{-4} Ci

B. 3.34×10^{-4} Ci

C. 4.34×10^{-4} Ci

D. 2.4×10^{-5} Ci

180 What will be the product after alpha decay of U-238?

- A. Th-234**
- B. Po-234
- C. Rn-234
- D. none of these

181 The radioactive element when decay to first half life the new element is called

- A. daughter element
- B. modified element
- C. radioactive element
- D. all of these**

182 The nucleus shape is considered to be

- A. square
- B. rectangle
- C. sphere**
- D. circular

183 The charge on gamma rays is

- A. $1+$
- B. $1-$
- C. 0
- D. none of these**

184 What will be the product after alpha decay of U-238?

- A. Th-234**
- B. Po-234
- C. Rn-234
- D. none of these

185 Which is not radioactive?

- A. ozone
- B. hydrogen
- C. sodium
- D. all of these**

186 A radioactive element emits 200 particles per second. After three hours 25 particles per second are emitted. The half life period of element will be

- A. 80 minutes
- B. 70 minutes

NUCLEAR PHYSICS

C. 60 minutes

D. 50 minutes

187 The charge on gamma rays is

A. $1+$

B. $1-$

C. 0

D. none of these

188 Which element has three isotopes?

A. H

B. O

C. Cl

D. none of these

189 The radius R of a nucleus is given by :

A. $R \propto A^{-1/3}$

B. $R \propto A^{1/3}$

C. $R \propto A^3$

D. None of these

190 If a photon is absorbed by a nucleus the energy of nucleus

A. remain same

B. increase slightly

C. decrease slightly

D. it will pass the nucleus

191 Find the probability that the nucleus of $^{87}\text{Ra}^{221}$ undergoes decay after three half-lives, if its a radioactive substance which has a half-life of 6 days.

A. $1/6$

B. $3/2$

C. $5/6$

D. $1/2$

192 The Na atom cannot produce x-rays because

A. inner shell transition is possible

B. inner shell transition is not possible

C. it is non radioactive

D. none of these

193 1 Curie is equal to

A. 1 MBq

B. 37 MBq

C. 37 GBq

D. 3.7 GBq

194 What is the S.I. unit of radioactivity?

A. Curie

B. Rutherford

C. Becquerel

D. all of these

195 In microwave ovens _____ is used to heat the food

A. x-rays

B. beta rays

C. gamma rays

D. electromagnetic rays

196 When the nucleus of an unstable atom emits only gamma radiation, the nucleus must

A. gain energy

B. lose energy

C. lose protons

D. gain protons

197 The reason that white light is not harmful radiation is that

A. its speed is less than other radiations

B. it is composed of different lights

C. it is originated from non radioactive element

D. none of these

198 An element X with Z 14 and A 6 has how many neutrons

A. 6

B. 8

C. 14

D. 20

199 The down quark has charge _____

A. $1/2-$

B. $1/2+$

C. $1/3-$

D. $2/3+$

ATOMIC SPECTRA

1 Black body is considered ideal when it

- A. emits a radiation
- B. absorbs all radiation
- C. both a and b**
- D. none of these

2 The angular momentum of photon is

- A. infinite
- B. zero**
- C. negative
- D. still not found

3 When electron series terminates on 4th orbit _____ series is obtained

- A. Balmer**
- B. Pfund
- C. Paschen
- D. none of these

4 The angular momentum of photon is

- A. infinite
- B. zero**
- C. negative
- D. still not found

5 When white light is passed through cool gases the spectra we observed is called

- A. Line spectra
- B. continuous spectra
- C. absorption line spectra**
- D. emission line spectra

6 The Davisson Germer experiment is used to explain

- A. interference
- B. polarization
- C. diffraction**
- D. none of these

7 Calculate the wavelength of photon associated with 3×10^{14} Hz frequency

- A. 10 micrometer
- B. 100 micrometer
- C. 1 micrometer**
- D. 2 micrometer

8 The Davisson Germer experiment is used to explain

- A. interference
- B. polarization
- C. diffraction**
- D. none of these

8 UV radiation is formed by bombarding gas molecules with

- A. electron**
- B. protons
- C. alpha rays
- D. any of these

9 The convection process transfer heat faster than radiation

- A. it depends on condition
- B. not always
- C. TRUE
- D. FALSE**

10 Which light has more velocity

- A. He-Ne laser
- B. white
- C. yellow
- D. all are equal**

11 Coherent source of light means

- A. multiple wavelength
- B. double wavelength
- C. single wavelength**
- D. coherent photons

12 The characteristic x-rays are formed due to bombardment of _____

- A. photon
- B. proton
- C. electron**
- D. none of these

13 The photoelectric effect is not possible with _____ photons

- A. x-rays
- B. beta rays
- C. gamma rays
- D. all of these**

ATOMIC SPECTRA

14 The spectrum of white light lies

- A. above 300 nm
- B. below 300 nm
- C. in between UV to IR**
- D. none of these

15 Mass and energy are related to each other by

- A. Newton's law
- B. Einstein law**
- C. Coulomb law
- D. all of these

16 The black body always _____ radiations

- A. emit
- B. absorb
- C. both a and b**
- D. reflects

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- A. above 300 nm
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- D. none of these

18 When electron series terminates on 4th orbit _____ series is obtained

- A. Balmer**
- B. Pfund
- C. Paschen
- D. none of these

19 Which ion represents alpha particles

- A. H^+
- B. C^+
- C. Na^+
- D. He^+**

20 Radiation emitted by hot bodies have color

- A. red
- B. green
- C. blue
- D. black**

21 Radiation emitted by hot bodies have color

- A. red

B. green

- C. blue
- D. black**

22 Lifetime of an excited state is

- A. $10^{(-6)}s$
- B. $10^{(-7)}s$
- C. $10^{(-8)}s$**
- D. $10^{(-3)}s$

23 Radiation emitted by hot bodies have color

- A. red
- B. green
- C. blue
- D. black**

24 When electron series terminates on 4th orbit _____ series is obtained

- A. Balmer**
- B. Pfund
- C. Paschen
- D. none of these

25 Which ion represents alpha particles

- A. H^+
- B. C^+
- C. Na^+
- D. He^+**

26 When electron series terminates on 4th orbit _____ series is obtained

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- B. Pfund
- C. Paschen
- D. none of these

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- D. none of these

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- B. absorb
- C. both a and b**

ATOMIC SPECTRA

D. reflects

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- B. beta rays
- C. gamma rays
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- C. electron**
- D. none of these

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- A. multiple wavelength
- B. double wavelength
- C. single wavelength**
- D. coherent photons

34 Which rays need medium to travel

- A. x-rays
- B. beta rays
- C. gamma rays
- D. no radiation need medium to travel**

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- B. white
- C. yellow
- D. all are equal**

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- D. emission line spectra

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- B. absorb

ATOMIC SPECTRA

C. both a and b

D. reflects

43 Black body is considered ideal when it

A. emits all radiation

B. absorbs all radiation

C. both a and b

D. none of these

44 Laser light is a type of

A. spontaneous

B. stimulated

C. both a) and b)

D. None of these

45 The source of x rays generation is

A. Cu

B. H

C. Na

D. A

46 In electron microscope image formed is

A. 2D

B. 3D

C. 1D

D. any of these

47 The interference of green photon to red photon will cause

A. spectrum

B. interference

C. diffraction

D. no effect

48 Microscope uses _____ wavelength to reduce diffraction

A. shorter

B. longer

C. white

D. none of these

49 If the clouds of earth behaves like a black body what will happen

A. no light will reach on surface

B. extra light will reach the surface

C. nothing will happen

D. some will reflect some will absorbed

50 Which rays have highest ionizing power

A. alpha

B. beta

C. gamma

D. white

51 Electron cannot reside inside nucleus is explained by

A. Compton effect

B. Photoelectric effect

C. Zeeman effect

D. Uncertainty principle

52 X rays are also known as

A. slow moving invisible photons

B. slow moving visible photons

C. fast moving invisible photons

D. fast moving visible photons

53 Which ray shows comparable penetrating power to x rays

A. alpha

B. beta

C. gamma

D. white

54 Blackbody shows a _____ spectra

A. continuous

B. discrete

C. both a) and b)

D. None of these

55 Bright Lines in pattern shows

A. absorption

B. emission

C. release

D. free particle

ATOMIC SPECTRA

56 According to Wien's law temperature and wave length are ____ related

- A. equal
- B. inversely**
- C. directly
- D. none of these

57 Which one of them is a type of emission

- A. spontaneous
- B. stimulated
- C. both a) and b)**
- D. None of these

58 The good absorbers of heat normally are

- A. poor conductor
- B. good conductor
- C. poor reflector
- D. none of these**

59 Woolen clothes keep the body warm because of

- A. bad conductivity**
- B. good conductivity
- C. low temperature
- D. none of these

60 Which rays are lasers?

- A. x-rays
- B. beta rays
- C. gamma rays
- D. coherent photons**

61 The relation which explains mass and wavelength are inversely related is called

- A. Maxwell
- B. De Broglie**
- C. Einstein
- D. none of these

62 Mass and energy are related to each other by

- A. Newton's law
- B. Einstein law**
- C. Coulomb law
- D. all of these

63 The radiation reached on earth by sun is

- A. alpha
- B. beta
- C. gamma
- D. all of these**

64 Which radiation passes through black body

- A. alpha
- B. gamma**
- C. beta
- D. white

65 Which rays have highest charge

- A. alpha**
- B. beta
- C. gamma
- D. none of these

66 Radiation exchange occurs in which medium

- A. solid
- B. liquid
- C. gas
- D. vacuum**

67 The value of Rydberg constant varies with atomic number as

- A. Z^3
- B. $1/Z^2$
- C. Z^2**
- D. Z

68 The spectrum of white light lies

- A. above 300 nm
- B. below 300 nm
- C. in between UV to IR**
- D. none of these

69 If the temperature of Sun is doubled heat energy reached on earth become

- A. three times
- B. sixteen times**
- C. four times
- D. same

70 If two bodies have same temperature the rate of heat transfer between them is

- A. infinite
- B. zero**

ATOMIC SPECTRA

- C. double the temperature
D. none of these

71 The angular momentum of photon is

- A. infinite
B. zero
C. negative
D. still not found

72 Calculate the wavelength of photon associated with 3×10^{14} Hz frequency

- A. 10 micrometer
B. 100 micrometer
C. 1 micrometer
D. 2 micrometer

73 The Davisson Germer experiment is used to explain

- A. interference
B. polarization
C. diffraction
D. none of these

74 Which of the constants is not related to radiation

- A. boltzmann
B. planck
C. solar constant
D. all of these

75 The penetrating power of x rays depends on

- A. frequency
B. amplitude
C. wavelength
D. all of these

76 The sum of absorption and transmission of light in a medium is equal to

- A. Incident light
B. reflected light
C. any of a or b
D. none of these

77 x-rays are diffracted from _____

- A. mirror

B. crystal

- C. gas molecules
D. all of these

78 Which of the following blocks will release heat fast

- A. rough white surface
B. polished white surface
C. rough black surface
D. polished black surface

79 The image received of absorbed x rays is

- A. inverted
B. real
C. any of a or b
D. virtual

80 Which surface will absorb more light

- A. yellow painted
B. blue painted
C. white painted
D. black painted

81 The units of Wien's constant is _____

- A. m.k
B. m/k
C. k/m
D. none of these

82 A set of Atoms in an excited state decays

- A. in any general state with lower energy
B. In any state when excited by electric field
C. In any state when excited by magnetic field
D. None of these

83 The wavelength of x-ray is controlled by _____

- A. increasing temperature
B. decreasing pressure
C. increasing P.D of electrodes
D. none of these

84 Laser light is

- A. multi directional
B. bi-directional

ATOMIC SPECTRA

C. uni-directional

D. none of these

85 Calculate the frequency of photon associated with 500 nm wavelength

A. 5×10^{14} Hz

B. 6×10^{14} Hz

C. 7×10^{14} Hz

D. 9×10^{14} Hz

86 The speed of photons in vacuum is ____ than in liquid water

A. higher

B. smaller

C. equal

D. none of these

87 Excited atoms returns to ground state in ____ time

A. 1 ns

B. 2ns

C. 3ns

D. all of these

88 The wavelength of beta rays is measured by

A. interference

B. polarization

C. absorption

D. diffraction

89 When electron series terminates on 4th orbit ____ series is obtained

A. Balmer

B. Pfund

C. Paschen

D. none of these

90 The flow of heat energy from hot to cold body is a/an ____ process

A. reversible

B. irreversible

C. depends on conditions

D. conduction process

91 Solar spectra is a type of

A. continuous

B. discrete

C. both a) and b)

D. None of these

92 Why x-rays are used in crystallography

A. to prevent interference

B. to prevent diffraction

C. to perform interference

D. to perform diffraction

93 Which color of heat shows highest temperature

A. red

B. blue

C. black

D. orange

94 The star which is very hot will emit ____ color

A. Blue

B. red

C. orange

D. green

95 The spectrum of perfect black body is

A. line

B. continuous

C. band

D. all of these

96 The ratio of mass of electron to neutron is

A. 1

B. 1200

C. 1300

D. none of these

97 Which light has more velocity

A. He-Ne laser

B. white

C. yellow

D. all are equal

98 Sun spectra also has dark lines in pattern which corresponds to

A. absorption

ATOMIC SPECTRA

B. emission

C. release

D. free particle

99 Atomic spectra is a _____ spectra

A. continuous

B. discrete

C. both a) and b)

D. None of these

100 Which rays cannot be produced by electronic transitions?

A.alpha

B.beta

C. gamma

D.all of these

101 According to Einstein, mass and energy are

A. inversely

B. directly

C. equal to

D. none of these

102 Spectra corresponding to sodium vapour lamp is

A. band spectra

B. line spectra

C. emission spectra

D. absorption spectra

103 An Ionic atom which is equivalent to hydrogen atom has wavelength equal to $1/4$ th of hydrogen lines is

A. He^+

B. Li^{++}

C. Ne^{+9}

D. Na^{10+}

104 Wave nature of He atom is similar to

A. alpha rays

B.beta rays

C.gamma rays

D.x-rays

105 Black body is considered ideal when it

A. emits all radiation

B. absorbs all radiation

C. both a and b

D. none of these

106 Which of the following is the rapid process

A. conduction

B. radiation

C. convection

D. all of these

107 The radiation reached on earth by sun is

A. alpha

B. beta

C. gamma

D. all of these

108 Scattering is a process involving

A. reflection

B. refraction

C. diffraction

D. none of these

109 UV radiation is formed by bombarding gas molecules with

A. **electron**

B. protons

C. alpha rays

D. any of these

110 Which of the following blocks will release heat fast

A. rough white surface

B. polished white surface

C. rough black surface

D. polished black surface

111 A material is made with two different shapes, which surface will absorb more heat in less time

A. rectangular shape of larger area

B. circular shape of smaller area

C. both will absorb same heat

D. heat absorption is independent of shape of material

112 The velocity of laser light is _____ to ordinary light

A. equal

ATOMIC SPECTRA

- B. higher
 C. lesser
 D. much higher

113 Mass and energy are related to each other by

- A. Newton's law
B. Einstein law
 C. Coulomb law
 D. all of these

114 The wavelength of x-ray is measured by ____

- A. diffraction**
 B. interference
 C. reflection
 D. all of these

115 Which rays has highest mass

- A. alpha rays**
 B. beta rays
 C. gamma rays
 D. none of these

116 Calculate the frequency of photon associated with 500 nm wavelength

- A. 5×10^{14} Hz
B. 6×10^{14} Hz
 C. 7×10^{14} Hz
 D. 9×10^{14} Hz

117 Excited atoms returns to ground state in ____ time

- A. 1 ns**
 B. 2ns
 C. 3ns
 D. all of these

118 Wave nature of electron is similar to

- A. proton
B. beta rays
 C. gamma rays
 D. all of these

119 Which of the constants is not related to radiation

- A. boltzmann**
 B. Bplanck
 C. solar constant
 D. all of these

120 A body at temperature T radiates heat according to relation

- A. T^{-2}
B. T^4
 C. T^{-4}
 D. none of these

121 Spectral lines is like a _____ of absorbed or emission energy in a spectrum

- A. charged pattern
B. fingerprint pattern
 C. discharged pattern
 D. None of these

122 The wavelength of beta rays is measured by

- A. interference
 B. polarization
 C. absorption
D. diffraction

123 Mass and energy are related to each other by

- A. Newton's law
B. Einstein law
 C. Coulomb law
 D. all of these

124 When electron series terminates on 4th orbit ____ series is obtained

- A. Balmer**
 B. Pfund
 C. Paschen

ATOMIC SPECTRA

D. none of these

125 The spectrum of white light lies

A. above 300 nm

B. below 300 nm

C. in between UV to IR

D. none of these

126 The black body always _____ radiations

A. emit

B. absorb

C. both a and b

D. reflects

127 The characteristic x-rays are formed due to

bombardment of _____

A. photon

B. proton

C. electron

D. none of these



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Introduction to fundamental concept of chemistry

The break down of molecular ions from natural products give important information about

- A.size
- B.position
- C.shape
- D structure**

If we are given with the mass of a substance ,we can calculate _____ of other substance with the help of a balanced chemical equation.

- A. mass
- B. volume
- C. moles
- D. all of these**

The number of neutrons in H_2SO_4 are

- A. 5
- B. 49
- C 48**
- D. 44

Isotopes are the atoms of same element having different number of _____

- A. electron
- B. proton
- C. positron
- D. neutron**

What is the mass of one mole aspartame having formula $C_{14}H_{18}N_2O_5$

- A. 4g
- B. 40g
- C. 50g**
- D. 1g

If 9.8 g of sulfuric acid dissolved in excess quantity of water, it will yield _____ moles of hydrogen ion (H^+) and _____ mole of sulphate ions (SO_4^{2-})

- A. 0.1, 0.2
- B. 0.1, 0.3
- C. 0.2, 0.4
- D. 0.2, 0.1**

Limiting reactant controls the amount of _

- A. reactant
- B. products**
- C. both A & B
- D. none of these

Actual yield is always less than theoretical yield due to

- A. operational losses
- B. reaction reversibility
- C. side reaction
- D. all of these**

It is the fact that $22.414 dm^3$ of any gas has a different masses but the same number of _____

- A. atoms
- B. particles
- C. molecules**
- D. none of these

Which of the following has six isotopes

- A. palladium
- B. tin
- C cadmium**
- D. carbon

The unit used to express the relative atomic mass is called

- A. gram unit
- B. Avogadro's number
- C. atomic mass
- D. atomic mass u**

X-ray work in 2 th century shows that diameter of the atoms are of the order

- A. .1nm
- B. 2nm**
- C. .3nm
- D. .4nm

The smallest number of molecules are present in

- A. 3.6g of H_2
- B. 4.8g of C_2H_5OH
- C. 2.8 g of CO
- D. 5.4 g of N_2O_5**

Chemical equations do not tell about the _____ because of certain limitations.

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- A. rate of reaction
- B. pressure
- C. conditions
- D. both A & C**

Actual yield is always less than theoretical yield due to

- A. operational losses
- B. reaction reversibility
- C. side reaction
- D. all of these**

The _study of composition of pure substance in 17th century clearly shows that few elements are components of many substances

- A. qualitative
- B. quantitative**
- C. both A & B
- D. extensive

The efficiency of a chemical reactions can be checked by calculating its _yields

- A. percentage**
- B. actual
- C. theoretical
- D. all of these

27 g of Al will react with how much mass of O₂ to produce Al₂O₃

- A. 8 g of oxygen
- B. 16 g of oxygen
- C. 32 g of oxygen
- D. 24 g of oxygen**

In stoichiometry, we follow law of _____ while doing calculations.

- A. conservation of mass
- B. definite proportion
- C. both A & B**
- D. none of these

Glucose(C₆H₁₂O₆) is the most important nutrient in a cell for generating chemical potential energy, what is the mass percent of carbon in 1.5g of sample

- A. 33%
- B. 40%**
- C. 53.3%
- D. 6.67%

The negative ions having group of atoms is/are

- A. OH-
- B. CO₃²⁻
- C. Cr₂O₇²⁻
- D. all of these**

Atomicity is determined by number of _____ present in a molecule

- A. dots
- B. atoms**
- C. sub particles
- D. electrons

The mass of one mole of electron is

- A. 1.8mg
- B. 0.184mg
- C. 0.55 mg**
- D. 0.64 mg

The number of atoms present in a molecule determines its

- A. shape
- B. size
- C. molecularity
- D. atomicity**

Avogadro's hypothesis is applicable to _____ only.

- A. all gases
- B. inert gases
- C. ideal gases**
- D. light gases

The efficiency of a chemical reactions can be checked by calculating its _yields

- A. percentage
- B. actual
- C. theoretical

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Introduction to fundamental concept of chemistry

Greater the number of moles, _____ will be the number of molecules

- A. lesser
- B. moderate
- C. greater**
- D. equal

If we are given with the mass of a substance, we can calculate _____ of other substance with the help of a balanced chemical equation.

- A. mass
- B. volume
- C. moles
- D. all of these**

In the gaseous state, the distance between the molecules is _____ times _____ than their diameters.

- A. 2, lesser
- B. 3, lesser
- C. 3, greater**
- D. 2, greater

The Relative atomic mass of copper is

- A. 63.345amu
- B. 63.455amu
- C. 63.55 amu**
- D. 63.456amu

Different kind of atoms of same element are called isotope having different _____ but same _____ properties

- A. physical, atomic
- B. physical, chemical**
- C. chemical, physical
- D. chemical, atomic

18g of water contains _____ atoms of hydrogen

- A. 6.022×10^{23}
- B. $3 \times 6.022 \times 10^{23}$
- C. $2 \times 6.022 \times 10^{23}$**
- D. $4 \times 6.22 \times 10^{23}$

Empirical formula and molecular formula of covalent molecule is

- A. different

B. same

- C. variable
- D. equal

What is the empirical formula for the following molecular formula C_5H_{12}

- A. C_5H_{12}**
- B. C_5H_6
- C. CH_2
- D. $C_2.5H_6$

Empirical formula of glucose $C_6H_{12}O_6$ is same with

- A. acetaldehyde
- B. formaldehyde**
- C. ethanol
- D. acetone

A mole of a substance contains _____ particles

- A. 6.2×10^{22}
- B. 6.22×10^{22}
- C. 6.02×10^{23}**
- D. 6.5×10^{22}

Chemical equations do not tell about the _____ because of certain limitations.

- A. rate of reaction
- B. pressure
- C. conditions
- D. both A & c**

The peaks forms in a mass spectrograph shows number of _____ of an element

- A. electrons
- B. isotopes**
- C. protons
- D. neutrons

In the gaseous state, the distance between the molecules is _____ times _____ than their diameters.

- A. 2, lesser
- B. 3, lesser
- C. 3, greater**
- D. 2, greater

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Introduction to fundamental concept of chemistry

In stoichiometry, we follow law of _____ while doing calculations.

- A. conservation of mass
- B. definite proportion
- C. both A & B**
- D. none of these

The smallest number of molecules are present in

- A. 3.6g of H_2
- B. 4.8g of C_2H_5OH
- C. 2.8 g of CO
- D. 5.4 g of N_2O_5**

1 amu is equal to

- A. $1.666 \times 10^{-27} \text{ kg}$
- B. $1.661 \times 10^{-28} \text{ kg}$
- C. $1.661 \times 10^{-27} \text{ kg}$
- D. $1.661 \times 10^{-27} \text{ kg}$**

The study of composition of pure substance in 17th century clearly shows that few elements are components of many substances

- A. qualitative
- B. quantitative**
- C. both A & B
- D. extensive

The concept of _____ of gases helps to relate solids and liquids in a quantitative manner.

- A. density
- B. molar volume**
- C. pressure
- D. temperature

In Al_2S_3 , the valency of Al is

- A. 2
- B. 3**
- C. -3
- D. -2

An ordinary microscope can measure the size of an object up to or above

- A. 25 nm
- B. 45 nm
- C. 5 nm**
- D. 6 nm

The negative ions having group of atoms is/are

- A. OH^-
- B. CO_3^{2-}
- C. $Cr_2O_7^{2-}$
- D. all of these**

The most common positive ions are formed by the atoms

- A. non metals
- B. metals**
- C. noble gases
- D. Hydrogen

The efficiency of a chemical reactions can be checked by calculating its _____ yields

- A. percentage**
- B. actual
- C. theoretical
- D. all of these

The formation of negative ion is a/an _____ process

- A. exothermic**
- B. endothermic
- C. both A & B
- D. none of these

During combustion analysis $MgClO_4$ is used to absorb

- A. oxygen gas
- B. hydrogen gas
- C. water vapors**
- D. alcohol

A full stop may have _____ atoms present in it

- A. one million
- B. two millions**
- C. one billion
- D. two billions

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A molecule of water has two bond, so 1 mole of water will contain ____ moles of bonds

- A. 1
- B. 2**
- C. 3
- D. 4

During combustion analysis MgClO_4 is used to absorb

- A. oxygen gas
- B. hydrogen gas
- C. water vapors**
- D. alcohol

A full stop may have ____ atoms present in it

- A. one million
- B. two millions**
- C. one billion
- D. two billions

A molecule of water has two bond, so 1 mole of water will contain ____ moles of bonds

- A. 1
- B. 2**
- C. 3
- D. 4

The unit used to express the relative atomic mass is called

- A. gram unit
- B. Avogadro's number
- C. atomic mass
- D. atomic mass unit**

Dalton's atomic theory couldn't explain the concept about

- A. isomers
- B. protons
- C. isotopes**
- D. nucleus

Atomicity is determined by number of ____ present in a molecule

- A. dots
- B. atoms**
- C. sub particles
- D. electrons

The breakdown of molecular ions from natural products gives important information about

- A. size
- B. position
- C. shape
- D. structure**

Greater the number of moles, ____ will be the number of molecules

- A. lesser
- B. moderate
- C. greater**
- D. equal

The relative abundance of isotopes of elements is measured by

- A. atomic spectroscopy
- B. ionic spectroscopy
- C. mass spectroscopy
- D. mass spectrometry**

Which of the following has six isotopes

- A. palladium
- B. tin
- C. cadmium**
- D. carbon

Limiting reactant controls the amount of _

- A. reactant
- B. products**
- C. both A & B
- D. none of these

Heavy water contain isotope of Hydrogen

- A. protium
- B. deuterium**
- C. tritium
- D. both A & C

The number of neutrons in H_2SO_4 are

- A. 5
- B. 49
- C. 48**
- D. 44

Avogadro's hypothesis is applicable to ____ only.

- A. all gases
- B. inert gas
- C. ideal gases**
- D. light gases

For the identification of isotopes of elements having solid state

- A. Aston spectrometer
- B. Dempster's mass**
- C. Soddy mass spectrometer
- D. atomic spectrometer

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The number of charges present on a cation depends on number of electron _by the atom

- A. gain
- B. lost**
- C. accept
- D. produced

Calculate mass in grams of 8.694 moles of Ag_2CO_3

- A. 1417.53g
- B. 2399.544g**
- C. 3456.78g
- D. 1231.98g

Which of the uranium isotope have larger mass.

- A. 6.22×10^{23} atoms of U - 235
- B. 6.22×10^{23} atoms of U - 2**
- C. 6.22×10^{23} atoms of U - 234
- D. all of these

Which one of them is used as an automobile antifreeze

- A. Ethanol
- B. ethene
- C. ethylene glycol**
- D. propene

_____ conducts nerve impulse in brain

- A. serotonin**
- B. aspartame
- C. ascorbic acid
- D. hydrazine

The mass of one mole of electron is

- A. 1.8mg
- B. 0.184mg
- C. 0.55 mg**
- D. 0.64 mg

The reactant which consumes completely in a reaction is known as _____ reactant

- A. fractional
- B. initial
- C. limiting**

D. minor

Nitrogen N_2 has _____ number of electrons, protons and neutrons

- A. 7,8,9
- B. 7,7,7
- C. 14,14,14**
- D. 14,14,15

The volume at S.T.P occupied by .8 g of N_2

- A. 2.24 dm^3
- B. 6.44 dm^3**
- C. 1.12 dm^3
- D. 112 dm^3

A sample so .7 mol of metal M reacts completely with excess of fluorine to form 45 g of MF_2 , how many moles of F are present in it.

- A. 1.4 moles**
- B. 2.4 moles
- C. 2 moles
- D. 1.2 moles

_____ is a macromolecule found in blood

- A. Hemoglobin**
- B. plasma
- C. creatinine
- D. plasmids

The number of atoms present in a molecule determines its

- A. shape
- B. size
- C. molecularity
- D. atomicity**

Total no. of electrons present in 48 g Mg^{2+} are

- A. $24N_A$
- B. $2N_A$
- C. $20N_A$**

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D. 1 NA

Total number of neutron in 5g of D₂O (D is H)

A. 25 NA

B. 1.1 NA

C. 2.5 NA

D. .5 NA

Which of the uranium isotope have larger mass.

A. 6. 22 x 1 23 atoms of U - 235

B. 6. 22 x 1 23 atoms of U -

C. 6. 22 x 1 23 atoms of U - 234

D. all of these

Out of 28 natural isotopes, how many have even atomic number and mass number

A. 152

B. 153

C. 154

D. 155

Limiting reactant controls the amount of _

A. reactant

B. products

C. both A & B

D. none of these

Masses of atoms ranges from

A. 110^{-28} kg to 1×10^{-22} kg

B. 1×10^{-26} kg to 1×10^{-23} kg

C. 1×10^{-27} kg to 1×10^{-24} kg

D. 1.6373×10^{-27} kg to $1 \times$

2 moles of octane (C₈H₁₈) burns with 25 moles of oxygen (O₂) and produced _____ moles of carbon dioxide along with 18 moles of water

A. 14

B. 16

C. 18

D. 2

Formula mass is considered for _____ compounds instead of their molecular mass

A. metallic

B. ionic

C. covalent

D. polar covalent

Molecular ions are produced by passing high energy electron beam or X-rays beam through _

A. atoms

B. molecules

C. gas

D. solid

A compound has an empirical (simple) formula, C₂H₂O. If the experimental molecular weight is found to be in the range 16 -17 , the molecular formula of this compound is: (Atomic wt.: C = 12, 1, H = 1, 8, O = 16.)

A. C₃H₆O₃

B. C₄H₄O₂

C. C₈H₈O₄

D. C₆H₆O₃

27 g of Al will react with how much mass of O₂ to produce Al₂O₃

A. 8 g of oxygen

B. 16 g of oxygen

C. 32 g of oxygen

D. 24 g of oxyge

An atom is composed of electrons, protons, neutrons and

A. hyprone

B. neutrino

C. anti neutrino

D. all of these

If 9.8 g of sulfuric acid dissolved in excess quantity of water, it will yield _____ moles of hydrogen ion (H⁺) and _____ mole of sulphate ions (SO₄⁻²)

A. 0.1, 0.2

B. 0.1, 0.3

C. 0.2, 0.4

D. 0.2, 0.1

_____ is a macromolecule found in blood

A. Hemoglobin

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- B. plasma
- C. creatinine
- D. plasmids

The atoms of hemoglobin is heavier than H-atoms

- A. 67,000 times
- B. 68,000 times**
- C. 65,000 times
- D. 69,000 times

If number of molecules of different gases are same at S.T.P ,the occupied volume will be

- A. greater
- B. same**
- C. smaller
- D. twice

If number of molecules of different gases are same at S.T.P ,the occupied volume will be

- A. greater
- B. same**
- C. smaller
- D. twice

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Atomic structure

What is the range of Azimuthal Quantum number(*l*)?

- A. to *n*
- B. to *s*
- C. to**
- D. to *s*-1

The '*m*' quantum number describes the _____ of electron

- A. energy level
- B. orbital or subshell
- C. orientation**
- D. Spin of electron

How many electrons can occupy in 7th energy level of an atom. Calculate by using $2n^2$ formula

- A. 24
- B. 5
- C. 72
- D. 98**

The *e/m* value is maximum for _____ gas because of _____ value of "*m*" for positive rays obtained from it.

- A. Oxygen gas, lowest
- B. hydrogen gas, highest
- C. hydrogen gas ,lowest**
- D. helium gas ,highest

Wave packet or quantum is often called photon in case of _____

- A. energy
- B. brightness
- C. light**
- D. darkness

If uncertainty in momentum of electron is zero, the uncertainty in its position would be ____?

- A. Less than zero
- B. more then zero
- C. one
- D. infinite**

Quantum numbers specify the _ of electron

- A. shape

B. energy

C. position

D. all of these

The probability of finding an electron between *s*-orbital is zero. This place is called _____ plane

- A. nodal**
- B. antinodal
- C. non nodal
- D. erect

The region where probability of finding the electron is maximum is called as

- A. Nucleus
- B. Atom
- C. Orbital**
- D. Nodal plane

The radius of an electron orbit in a hydrogen atom is of the order of

- A. 1 -8 m
- B. 1 -1 m
- C. 1 -11 m**
- D. 1 -13 m

The value of Principal quantum number is _ integers up to infinity

- A. zero, positive
- B. non zero, positive**
- C. non zero, negative
- D. positive

Which of the following shows Planck's quantum theory

- A. $E=h\nu$
- B. $E=c/\nu$
- C. $E = c\nu$
- D. none of these**

a photon of wavelength 1.27×10^{-5} m is emitted when it jump from higher to *n* = 1, what will be higher orbit

- A. *n* = 2
- B. *n* = 3
- C. *n* = 4**
- D. *n* = 5

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Atomic structure

Quantum number values for 2p orbitals are

A. $n = 2, l = 1$

B. $n = 1, l = 2$

C. $n = 1, l =$

D. $n = 2, l =$

The region where probability of finding the electron is maximum is called as

A. Nucleus

B. Atom

C. Orbital

D. Nodal plane

The region where probability of finding the electron is negligible is called as

A. Nucleus

B. Atom

C. Orbital

D. Nodal plane

According to 'n+l' rule, the value of 6f is 9 while 7s orbital has '7' value, it shows

A. 6f filled first

B. 7s placed first

C. 7s placed later

D. 6f placed later

According to Bohr, the orbits in which electrons revolve around the nucleus are

A. oval

B. elliptical

C. cylindrical

D. circular

When we calculate radii of Hydrogen atom by this equation $r = .529A (n^2)$ where $n = 1, 2, 3, 4$, the distance between orbits of hydrogen atom will

A. decrease

B. increase

C. remains same

D. be constant

an element or its compound is first _____ to get its _____ spectrum by spectrometer

A. freezed, continuous

B. freezed, line

C. volatilized, line

D. volatilized, continuous

If $n = 4$ it will contain sub shells

A. s

B. p

C. s, p, d

D. s, p, d, f

Electrons can revolve only in those orbits having _____ angular momentum which depends on its _____ number.

A. variable, quantum

B. fixed, principal

C. fixed, quantum

D. variable, principal

Which of the following shows Planck's quantum theory

A. $E = h\nu$

B. $E = c/\nu$

C. $E = c\nu$

D. none of these

Each electron in an atom must have its own unique set of quantum number is a statement of _____

A. Aufbau principle

B. Pauli exclusion principle

C. Hund's rule

D. none of these

An electron in an atom is completely described by its

A. 2 quantum numbers

B. only one quantum number

C. four quantum numbers

D. 3 quantum numbers

Which character of p-orbital determines the geometry of molecules

A. planar

B. axial

C. non directional

D. directional

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Atomic structure

Quantum numbers specify the _of electron

- A. shape
- B. energy
- C. position**
- D. all of these

The presence of several fine lines in line spectrum shows the presence of

- A.shells
- B.energy levels
- C.sub shells**
- D.all of these

Who discovered positive rays also called protons and when?

- A. Chadwick,1895
- B. Goldstein,1886**
- C. Rutherford,1885
- D. J.Perrin,1885

For a sub shell $l=2$ and $m = -2,-1, +1,+2$,it implies that it has _____ space orientation

- A. one
- B. two
- C. three
- D. five**

For a sub shell $l=2$ and $m = -2,-1, +1,+2$,it implies that it has _____ space orientation

- A. one
- B. two
- C. three
- D. five**

_____cathode is used in discharge tube experiment for discovery of protons

- A. flat
- B. round
- C. perforated**
- D. oval

The maximum number of electron accommodated in a shell or energy level is calculated by formula

- A. n^2
- B. $2n^2$**

- C. $2n$
- D. $3n$

According to _____ theory, atoms were the ultimate particles that cannot be divided further.

- A. Bohr's
- B. Rutherford's
- C. Dalton's**
- D. cannizzaro's

The region where probability of finding the electron is maximum is called as

- A. Nucleus
- B. Atom
- C. Orbital**
- D. Nodal plane

Quantum numbers are set of numerical values which give solution to the equation

- A. planks
- B. Heisenberg
- C. Schrödinger**
- D. all of these

For the study of particles, discharge tube is filled with

- A. gas
- B. air
- C. vapours of a substance
- D. all of these**

an element or its compound is first _____ to get its _____ spectrum by spectrometer

- A. freezed,continuous
- B. freezed,line
- C. volatilized, line**
- D. volatilized,continuous

The concept of atoms was given by _____

- A. Democritus
- B. Berzelius
- C. Bohr
- D. Dalton**

How many electrons can occupy in 7th energy level of an atom. Calculate by using $2n^2$ formula

- A. 24
- B. 5

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Atomic structure

C. 72

D. 98

Quantum numbers specify the _of electron

A. shape

B. energy

C. position

D. all of these

Canal rays are produced in the discharge tube from_____?

A. Anode

B. Cathode

C. Gas molecules

D. None of these

According to Bohr's theory Electron should move _nearer to nucleus in an orbit of _radii

A. slower, smaller

B. faster, smaller

C. faster, bigger

D. slower, bigger

sodium-11 has electronic configuration

A. [He]2s1

B. [Ne] 3s1

C. [Ne]3s2

D. [He]2s2

The value of Planck's constant 'h' is

A. 6.626×10^{-34} KJs

B. 6.262×10^{-34} Js

C. 6.626×10^{-34} Js

D. 6.262×10^{-34} Js

An orbital can accommodate at the most _electrons

A. 2

B. 14

C. 1

D. 6

The value of energy obtained for the electron in the nth orbit of hydrogen atom is in

A. Joules

B. Joules/atom

C. Kilojoules

D. Kilojoules/atom

When an electron changes its orbit from outer to inner level, energy is

A. no change

B. absorbed

C. released

D. remains constant

An orbital can accommodate at the most _electrons

B. 14

C. 1

D. 6

Positive rays are produced when _____strike the molecules of a gas in a discharge tube

A. low speed neutrons

B. high speed neutrons

C. low speed electrons

D. high speed electrons

The value of Principal quantum number "n" represent

A. energy of electron

B. location of electron

C. shells or energy levels

D. all of these

The value of Planck's constant 'h' is

A. 6.626×10^{-34} KJs

B. 6.262×10^{-34} Js

C. 6.626×10^{-34} Js

D. 6.262×10^{-34} Js

The value of Principal quantum number "n" represent

A. energy of electron

B. location of electron

C. shells or energy

D. all of these

the mass of proton is _times heavier than _____

A. 1836, electrons

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Atomic structure

- B. 1886.electrons
- C. 1836,protons
- D. 1836,electrons**

According to _____ theory, atoms were the ultimate particles that cannot be divided further.

- A. Bohr's
- B. Rutherford's
- C. Dalton's**
- D. cannizzaro's

Which of the following shows Planck's quantum theory

- A. $E=h\nu$
- B. $E=c/\nu$
- C. $E = c\nu$
- D. none of these**

When an electron changes its orbit from outer to inner level, energy is

- A. no change
- B. absorbed
- C. released**
- D. remains constant

If a hydrogen atom remains in its first excited level, how many times will its radius be greater than Bohr's radius

- A. twice
- B. four times**
- C. same, same
- D. eight times

line spectrum of sodium contains _____ colored lines separated by a definite distance

- A. one yellow
- B. two yellow**
- C. two brown
- D. two golden

The e/m values for the positive rays depends on _____ enclosed in a discharge tube.

- A. nature of gas**

- B. properties of gas
- C. composition of gas**
- D. all of these

How do the 'p' orbitals p_x , p_y , p_z differ from each other

- A. size
- B. shape
- C. orientation**
- D. capacity

The wavelength of radiation that have been absorbed by an element appear as _____ lines and background is _____ in an atomic absorption spectrum

- A. dark, bright**
- B. bright, dark
- C. dark, light
- D. bright, light

sodium-11 has electronic configuration

- A. $[\text{He}]2s^1$
- B. $[\text{Ne}] 3s^1$**
- C. $[\text{Ne}]3s^2$
- D. $[\text{He}]2s^2$

The formula for calculating electron in subshells or sub energy levels is

- A. $2l+1$
- B. $2(l+1)$
- C. $2(2l+1)$**
- D. $2(2l-1)$

If a hydrogen atom remains in its first excited level, how many times will its radius be greater than Bohr's radius

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- C. same, same
- D. eight times

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Atomic structure

When an electron jumps from $n = 5$ to $n = 2$ having wavenumber equal to $2.3 \times 10^6 \text{ m}^{-1}$. In which spectral series will it fall?

- A. Lyman
- B. Balmer**
- C. visible
- D. infrared

an element or its compound is first _____ to get its _____ spectrum by spectrometer

- A. freeze, continuous
- B. freeze, line
- C. volatilized, line**
- D. volatilized, continuous

Which character of p-orbital determines the geometry of molecules

- A. planar
- B. axial
- C. non directional
- D. directional**

According to Bohr, the orbits in which electrons revolve around the nucleus are

- A. oval
- B. elliptical
- C. cylindrical
- D. circular**

The maximum probability of finding an electron is at distance of

- A. 0.53mm
- B. 0.53nm**
- C. 0.153nm
- D. 1.53mm

line spectrum of sodium contains _____ colored lines separated by a definite distance

- A. one yellow
- B. two yellow**
- C. two brown
- D. two golden

The equation $E_n = -2.17 \times 10^{-18} [1/n^2] \text{ J}$ gives the energy associated with electron in n th orbit of hydrogen atom. Its negative sign shows that electron is

- A. away from nucleus
- B. bound by nucleus**
- C. closer to nucleus
- D. all of these

All the three p-orbitals have same energy in the absence of magnetic field and are called _____ orbital's

- A. generated
- B. delocalized
- C. degenerated**
- D. localized

Spectrum is the visual display or _____ of component of white light when it is passed through prism

- A. rarefaction
- B. radiation
- C. collection
- D. dispersion**

The value of Planck's constant 'h' is

- A. $6.626 \times 10^{-34} \text{ KJs}$
- B. $6.262 \times 10^{-34} \text{ Js}$
- C. $6.626 \times 10^{-34} \text{ Js}$**
- D. $6.262 \times 10^{-34} \text{ Js}$

The energy of photons related to

- A. frequency
- B. wave length
- C. wave number
- D. all of these**

An orbital can accommodate at the most _____ electrons

- A. 2**
- B. 14
- C. 1
- D. 6

Atomic structure

The shapes of subshells is _if value of azimuthal quantum number 'l' is 2

- A. spherical
- B. dumbbell
- C. complicated**
- D. all of these

In which direction Cathode rays deflected in the presence of magnetic field?

- A. Moves upward**
- B. Moves downward
- C. Move randomly
- D. Moves in straight line

If $n = 4$ then what can be value of 'magnetic quantum number

- A. 4,3,2,1
- B. 3,2,1
- C. infinity
- D. none of these**

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- D. none of these**

When an electron remains between orbit, its momentum is

- A. dequantized
- B. quantized**
- C. emitted
- D. changes always

Which of the following shows Planck's quantum theory

- A. $E = h\nu$
- B. $E = c/\nu$
- C. $E = c\nu$
- D. none of these**

An orbital can accommodate at the most _electrons

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CHEMICAL EQUILIBRIUM

- The equilibrium Constant is always written as a ratio of
 - Reactants over products
 - Products over reactants
 - Product times Reactants
 - None of these
- A very small value of K_c depicts
 - No Reaction
 - Backward Reaction
 - Little Forward Reaction
 - Complete Reaction
- With different number of moles of reactants and product the volume of system
 - Remains unchanged
 - changes
 - decrease
 - increase
- A reaction with a tendency of occurring in forward and backward direction simultaneously is termed as
 - Irreversible
 - Unidirectional
 - Multidirectional
 - Reversible
- K_c and K_p have the same value when reactants and products have same number of
 - Atoms
 - Molecules
 - Ions
 - Moles
- Strong Electrolytes are those which ionizes
 - Slowly
 - Do not ionize
 - Ionize rapidly
 - None of these
- As Reaction proceeds the concentration of reactants
 - decreases
 - Remain unchanged
 - increases
 - cannot be predicted
- What is the pH of human blood?
 - 7.45
 - 7.35
 - 7
 - 7.53
- Effect of Change in Pressure for a reaction with different number of moles at reactant and product side are
 - Irreversible Reactions
 - Reversible reactions
 - Reversible gaseous reactions
 - All of these
- Concentration of reactants and products are expressed as Moles per unit
 - Area
 - Length
 - Volume
 - None of these
- Suppression in ionization is done for
 - Weak Electrolyte
 - Strong Electrolyte
 - Only Reactants
 - Dissociated Ions
- Activated complex is formed due to
 - Pressure
 - Temperature
 - Effective collision
 - Ineffective collision

CHEMICAL EQUILIBRIUM

13. Heat of a solution for the substance whose solubility decrease with increase in temperature is
 A. Positive
 B. Zero
 C. High
D. Negative
14. The conversion of Nitrogen to ammonia or nitrogenous compounds is called
 A. Nitrification
B. Nitrogen Fixation
 C. Denitrification
 D. Assimilation
15. According to Le chatelier's Principle Exothermic reactions are favored by
 A. Increase in Pressure
 B. Increase in Volume
C. decrease in Temperature
 D. All of these
16. $K_p = K_c (RT)^{\Delta n}$, T stands for
 A. Temperature
B. Absolute Temperature
 C. Critical Temperature
 D. All of these
17. Equilibrium constant for Ideal gases in terms of partial pressure is denoted by
 A. K_c
 B. K
C. K_p
 D. None of these
18. In Haber's process the final product ammonia is converted into
 A. solid state
B. Liquid state
 C. gaseous state
 D. None of these
19. Equilibrium curve can be drawn by plotting
 A. Time and Speed
 B. Temperature and Pressure
C. Time & Concentration
 D. Pressure & Concentration
20. Δn is the difference in number of moles of reactants and products in a reaction which is
 A. Solid Phase
 B. Liquid phase
C. Gaseous Phase
 D. Plasma Phase
21. If no of moles of products are more than those of reactants, volume in the equilibrium expression appears in
A. denominator
 B. Numerator
 C. As Exponent
 D. None of these
22. Conjugate base of a weak acid is
 A. Weak
B. Strong
 C. Unstable
 D. None of these
23. For Ideal gases the molar concentration can be expressed as their
 A. Volume
 B. density
C. partial pressure
 D. temperature
24. Buffer solutions resist change in their
 A. temperature
 B. solubility
 C. volatility
D. pH
25. When a catalyst is added to a reversible reaction, at equilibrium state the value of equilibrium constant
 A. decreases
 B. Increases
C. Remains unchanged
 D. First decrease then increase

CHEMICAL EQUILIBRIUM

26. The precipitation of weaker electrolyte follows
 A. Law of Mass Action
 B. Law of energy Conservation
C. Le chatelier's Principle
 D. None of these
27. In an Irreversible reaction the tendency of it to go in reverse direction is
 A. High
 B. low
C. negligible
 D. none Of these
28. Activated complex is formed due to
 A. Pressure
 B. Temperature
C. Effective collision
 D. Ineffective collision
29. Phenol gives electrophilic substitution reactions due to?
 A. OH group
 B. Phenoxide ion
C. Benzene ring
 D. All of these
30. The E.m.f of a Cell is equals to
 A. Emf(oxidation) - Emf(Reduction)
B. Emf(oxidation) + Emf(Reduction)
 C. Emf(oxidation) x Emf(Reduction)
 D. None of these
31. If K_p and K_c have same values Δn will be
 A. Maximum
 B. Minimum
C. Zero
 D. Negligible
32. Manufacturing of Ammonia by Haber's process is an
 A. endothermic reaction
B. exothermic reaction
 C. irreversible
 D. Slow
33. A chemical reaction has reached has reached to a state of dynamic equilibrium at certain temperature, Which of the statement is incorrect
 A. Concentration of the reactants remains constant
 B. Products are continuously being formed
 C. The rate of forward and backward reactions are same
D. The reaction has stopped completely
34. Decomposition of Ozone has a very low value of equilibrium constant because of its
 A. stability
 B. reactivity
 C. compressibility
D. Instability
35. Strong Electrolytes are those which ionizes
 A. Slowly
 B. Do not ionize
C. Ionize rapidly
 D. None of these
36. First Law of thermodynamics is
 A. $\Delta E = \Delta H$
 B. $\Delta E = q + p$
C. $\Delta E = q + w$
 D. $\Delta E = -P\Delta V$
37. Dalton's law of partial pressure is used to derive the relation between K_c and
 A. Temperature
 B. Universal Gas constant
 C. Δn
D. K_p
38. If Ammonia is not withdrawn continuously from equilibrium mixture its yield will be
 A. increased
B. decreased
 C. remain unchanged
 D. None of these

CHEMICAL EQUILIBRIUM

39. The catalyst in the formation of ester from alcohol and a weak acid is
- A base
 - Palladium
 - Nickel
 - A mineral Acid
40. Manufacturing of Ammonia by Haber's process is an
- endothermic reaction
 - exothermic
 - irreversible
 - Slow
41. Heat of solution for NaCl is
- High
 - low
 - Zero
 - One
42. Equilibrium constant has
- Units
 - No Units
 - Both A and
 - A negative value
43. By Increasing temperature in Ammonia synthesis the value of K_c
- decreases
 - increases
 - remain constant
 - None of these
44. Shifting the position of equilibrium can be used to Increase
- Temperature
 - pressure
 - yield of reaction
 - All of these
45. When Number of moles of reactants and products are same Equilibrium constant will have
- negative value
 - Large value
 - No units
 - Units
46. In Haber's process volume percentage of ammonia in equilibrium mixture is
- 30%
 - 32%
 - 35%
 - 33%
47. To avoid long reaction time and to get equilibrium mixture quickly we add
- More reactants
 - catalyst
 - inhibitors
 - enzymes
48. Le Chatelier Principle is about
- Reaction Mixture
 - Reactants
 - Equilibrium Mixture
 - Products
49. Which of the these reactions occur at a moderate rate
- Rusting Of Iron
 - Fermentation of sugar
 - Hydrolysis of Ester
 - Chemical weathering of stone work by acid.
50. H_3O^+ ions act as
- Base
 - Catalyst
 - Buffer
 - Acid
51. reaction with a tendency of occurring in forward and backward direction simultaneously is termed as
- Irreversible
 - Unidirectional
 - Multidirectional
 - Reversible

CHEMICAL EQUILIBRIUM

52. equilibrium, if heat energy is then removed, the equilibrium will shift
A. to the product side
 B. to reactant side
 C. toward the middle
 D. None of these
53. The activation energy for forward and reverse reaction can be lowered by
 A. Lowering temperature
 B. decreasing pressure
C. catalyst
 D. All of these
54. By increasing the concentration of substance on reactant side shifts the equilibrium to
 A. Backward direction
B. Forward Direction
 C. higher concentration
 D. None of these
55. Half-life period for a first order reaction is independent of
 A. Conditions of temperature
B. Initial Concentration of the compound
 C. Presence of Catalyst
 D. All of these
56. The conversion of Nitrogen to ammonia or nitrogenous compounds is called
 A. Nitrification
B. Nitrogen Fixation
 C. Denitrification
 D. Assimilation
57. Reaction of Sodium with water is an example of
 A. Reversible reaction
 B. Endothermic
C. Irreversible
 D. Slow
58. Temperature for maximum yield at an appropriate reaction rate is
 A. 200 C
 B. 250C
 C. 450C
D. 400C
59. Concentration of reactants and products are expressed as Moles per unit
 A. Area
 B. length
C. Volume
 D. None of these
60. The coefficients of balanced equation are a part of Equilibrium constant value as
 A. denominator
 B. numerator
C. powers of concentration
 D. All of these
61. By changing Pressure at equilibrium which value is changing
 A. K_c
 B. K_p
C. Equilibrium Position
 D. All of these
62. At equilibrium if the concentration of product is increased reaction will proceed to
 A. Forward Direction
B. Backward Direction
 C. Remain Undisturbed
 D. None of these
63. The product of active masses of reactant is related to
 A. Equilibrium constant
B. rate of reaction
 C. Direction of reaction
 D. Temperature of reaction
64. Change in Pressure will only affect the substances which are in
 A. Liquid state
 B. Solid State
 C. Plasma state
D. Gaseous State

CHEMICAL EQUILIBRIUM

65. H_3O^+ ions act as
 A. Base
 B. Catalyst
 C. Buffer
D. Acid
66. Equilibrium constant for Ideal gases in terms of partial pressure is denoted by
 A. K_c
 B. K
C. K_p
 D. None of these
67. If at equilibrium state temperature is increased, it will favor
 A. Exothermic Reactions
B. Endothermic Reactions
 C. Reversible gaseous reactions
 D. Irreversible reactions
68. With different number of moles of reactants and product the volume of system
 A. Remains unchanged
B. changes
 C. decrease
 D. increase
69. Which of these have a positive value of enthalpy
 A. Combustion
 B. Neutralization
C. Atomization
 D. All of these
70. Le Chatelier Principle is about
 A. Reaction Mixture
 B. Reactants
C. Equilibrium Mixture
 D. Products
71. The rate of formation of ammonia is not economical at
 A. Low temperature
 B. Very high pressure
C. Both A and B
 D. None of these
72. Rate of reaction increases with increase by increasing temperature because
 A. The concentration of the reaction increases
 B. The activation energy for reaction increases
C. Collision frequency increases
 D. All of these
73. Strong Electrolytes are those which ionizes
 A. Slowly
 B. Do not ionize
C. Ionize rapidly
 D. None of these
74. 80% of ammonia produced by Haber's process is used in manufacturing
 A. Explosives
 B. polymers
C. fertilizers
 D. All of these
75. Le Chatelier Principle is about
 A. Reaction Mixture
 B. Reactants
C. Equilibrium
 D. Products
76. At equilibrium the reaction mixture contains
 A. Only Products
 B. Reactants
C. Both
 D. None of these
77. For higher yields of ammonia increase in temperature is replaced by
 A. Increasing pressure
 B. decreasing volume
C. Using catalyst
 D. All of these
78. With different number of moles of reactants and product the volume of
 A. Remains unchanged
B. changes
 C. decrease
 D. increase

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79. The conversion of Nitrogen to ammonia or nitrogenous compounds is called

- A. Nitrification
- B. Nitrogen Fixation**
- C. Denitrification
- D. Assimilation

80. The rate of reaction

- A. Increases as the reaction proceeds
- B. Decreases as the reaction proceeds**
- C. Remains unchanged
- D. None of these

81. At equilibrium if the concentration of product is increased reaction will proceed to

- A. Forward Direction
- B. Backward Direction**
- C. Remain Undisturbed
- D. None of these

82. Strong Electrolytes are those which ionize

- A. Slowly
- B. Do not ionize
- C. Ionize rapidly**
- D. None of these

83. Change in Pressure will only affect the substances which are in

- A. Liquid state
- B. Solid State
- C. Plasma state
- D. Gaseous State**

84. Volume factor can appear in equilibrium constant expression in

- A. denominator
- B. Numerator
- C. Both A and B**
- D. Only in Numerator

85. Half-life period for a first order reaction is independent of

- A. Conditions of temperature
- B. Initial Concentration of the compound**
- C. Presence of Catalyst
- D. All of these

86. Manufacturing of Ammonia by Haber's process is an

- A. endothermic reaction
- B. exothermic reaction**
- C. irreversible
- D. Slow

GASES CHAPTER

The molecules of ____ have dipole-dipole interaction

- A. methane
- B. neon
- C. ammonia**
- D. ethane-ethyl alcohol

While calculating vapor pressure of a liquid in manometer, the column of mercury facing the vapors of a liquid is ____ due to pressure on surface of liquid in flask

- A. compressed
- B. depressed**
- C. rises
- D. lowers

According to Avogadro's law, .899 g of 1 dm³ H₂ and 1.4384 g of 1 dm³ O₂ have number of molecule

- A. same**
- B. different
- C. H₂ has more
- D. O₂ has more

88 ____ are estimated to constitute more than 99% of the visible universe

- A. solids
- B. liquids
- C. gases
- D. plasmas**

What is the value of One calorie in joule?

- A. 4.98J
- B. 7.98J
- C. 4.18J**
- D. 8.21J

The gas laws describes the ____ behavior of gases

- A. abrupt
- B. non-uniform
- C. uniform**
- D. disordered

The ratio of PV to T is a constant quantity I-e

- A. k
- B. R**
- C. n
- D. K

Carboxylase are example of which type of enzyme:

- A. Hydrolases
- B. Lyases
- C. Transferases
- D. Ligases**

The molecule of water has structure

- A. cubic
- B. tetrahedral**
- C. trigonal
- D. hexagonal system

Values of Van der Waals' constant 'b' in correct order is

- A. CO₂ < SO₂ < O₂ < H₂
- B. CO₂ > SO₂ > O₂ > H₂**
- C. O₂ < H₂ < CO₂ < SO₂
- D. O₂ > H₂ > CO₂ > SO₂

The unit ____ is commonly used by meteorologist

- A. Bar
- B. centibar
- C. millibar**
- D. kilobar

Gases are ideal at high ____ and become non ideal at high

- A. pressure, volume
- B. pressure, temperature
- C. temperature, Pressure**
- D. volume, pressure

A gas having volume of 1 dm³ is enclosed in a vessel at 1 c and 2.5 atm. This gas is allowed to expand until new pressure is 2 (No Suggestions) will be new volume if the temperature is maintained at 273 k?

- A. 12dm³
- B. 1.25dm³**
- C. 1dm³

GASES CHAPTER

D. 12.3 dm^3

Steam causes more severe burns than boiling water because it has

- A. latent heat of fusion
- B. latent heat of vaporization**
- C. latent heat of sublimation
- D. all of these

Calculate the mass of 1 dm^3 of NH_3 gas at 3°C and 1 mm Hg pressure, considering that NH_3 is ideally behaving

- A. 0.99g**
- B. 0.89g
- C. 0.9kg
- D. 0.78g

Molecules of liquids are in constant state of motion, it causes

- A. diffusion
- B. evaporation
- C. melting
- D. both A & B**

25 cm^3 of the sample of H_2 gas effuses four times as rapidly as 25 cm^3 of an unknown gas what will be the molar mass of unknown gas?

- A. 16 g mol^{-1}
- B. 32 g mol^{-1}**
- C. 72 g mol^{-1}
- D. 48 g mol^{-1}

PV/nRT for an ideal gas is called

- A. expansion factor
- B. depression factor
- C. compressibility factor**
- D. diffusion factor

The sum of mole fraction of the gases in a mixture of gases is

- A. always greater than 1
- B. always smaller than 1
- C. may be equal or less than 1

D. always 1

Which of the following properties does not belong to Gases?

- A. Indefinite volume
- B. Indefinite shape
- C. Low density
- D. Strong interactions**

1 Pascal is equal to

- A. 1 Nm^{-2}
- B. 76 torr
- C. 1.1325 pa
- D. all of these**

Ammonia can form only one H-bond because of presence of

- A. 3 free electron
- B. one lone pair of electron**
- C. 5 electron in outer shell
- D. none of these

What will be density of CH_4 at $^\circ\text{C}$ and 1 atm

- A. 7138 g/cm^3
- B. 0.7138 g/dm^3
- C. 0.7138 g/cm^3**
- D. 71.38 g/dm^3

Plasma 'the fourth state of matter' was identified by

- A. Berzelius
- B. William Crooks**
- C. Dalton
- D. Rutherford

If a graph is plotted between pressure on x-axis and volume on y-axis for Boyle's law verification, the curve obtained is called

- A. pseudotherm
- B. isotherm**
- C. biotherm
- D. all of these

The properties of gases, liquids and solids can be understood by

- A. atomic theory
- B. potential molecular theory
- C. kinetic molecular theory**
- D. none of these

GASES CHAPTER

London dispersion forces are the only forces present among

A. atoms of helium in gaseous

B. molecules of water

C. molecules of solid iodine

D. molecules of HCl gas

The unit for Van der Waals constant 'b' is

A. mol dm^{-3}

B. dm^3

C. $\text{m}^3 \text{mol}^{-1}$

D. $\text{m}^3 \text{mol}$

If pressure is reduced to one half and temperature of a gas is doubled, what will be volume

A. reduced 4 times

B. increased 4 times

C. remains same

D. gets doubled

The vapor pressure of water at 8°C is

A. 4.579 torr

B. 23 torr

C. 8.1 torr

D. 17.54 torr

Liquids can be converted into solids by decreasing their

A. potential energy

B. kinetic energy

C. both A & B

D. none of these

Which inert gas is mixed with oxygen gas by deep sea divers to adjust the partial pressure of oxygen gas

A. Neon

B. Helium

C. Argon

D. Krypton

The amount of heat required to vaporize ONE mole of liquid at its ____ is called molar heat of vaporization

A. melting point

B. boiling point

C. freezing point

D. cooling point

The intermolecular forces are very weak in

A. solids

B. liquids

C. gases

D. all of these

The density of a gas X is 6 times the density of a gas Y. If the molecular mass of X is M then what will be molecular mass of Y

A. $M/6$

B. $2M$

C. $6M$

D. $6/M$

Effusion is the movement of a gas through extremely small opening of molecular size into region of ____ pressure

A. high

B. low

C. moderate

D. same

when sudden expansion of gases takes place, cooling occurs. This is called

A. freezing effect

B. Joule Thomson effect

C. Boyles effect

D. J.Perrin effect

when sudden expansion of gases takes place, cooling occurs. This is called

A. freezing effect

B. Joule Thomson effect

C. Boyles effect

D. J.Perrin effect

The strength of intermolecular forces in liquids, solids and gases depends directly on

A. speed of atoms

B. motion of particles

C. distance b/w molecules

D. all of these

The rate of diffusion or effusion is ____-proportional to square root of its density at constant T and P

A. directly

B. inversely

GASES CHAPTER

- C. equally
D. highly

Which gas among them shows maximum ideal behavior

- A. Ammonia
B. Hydrogen
C. Helium
D. Radon

The gas is at 3 atm, what will be the pressure of a gas if it expands three times

- A. 1 atm**
B. 3atm
C. 6atm
D. 9atm

The density of an ideal gas falls as its temperature _____ and pressure _____

- A. decrease, increase
B. increase, decrease
C. falls. Constant
D. constant ,constant

Which gases are used as mixture for breathing in sea?

- A. Oxygen and nitrogen
B. Carbon dioxide and oxygen
C. Helium and oxygen
D. Helium and hydrogen

Which state of matter don't have definite volume and occupy space

- A. solids
B. liquids
C. gases
D. all of these

Charles's law is not being obeyed when temperature is measured on Celsius scale. That's why new scale called _____ has been developed

- A. zero Fahrenheit
B. zero Kelvin
C. absolute Fahrenheit
D. all of these

cooling is caused by
A. vapor pressure

B. evaporation

- C. freezing
D. none of these

Kinetic molecular theory was proposed by

- A. Berzelius
B. Boltzmann
C. Bernoulli
D. Maxwell

In Boyle's law, the relationship between pressure and volume is

- A. directly proportional
B. inversely proportional
C. constant
D. none of these

London forces are present in

- A. ammonia
B. water
C. kerosene oil
D. HCl

A real gas obeying Van der Waals equation will resemble to ideal gas if both a & b are

- A. small**
B. large
C. equal
D. none of these

What is the S.I. unit of pressure?

- A. Nm^{-2}**
B. Nm^2
C. mm of Hg
D. atm

One atmosphere is the force of _____ long column of mercury on an area of 1cm^2 at c

- A. 76cm**
B. 76mm
C. 76dm
D. 76pm

The molecules of solids possess kinetic energy
A. translational

GASES CHAPTER

B. vibrational

- C. both A & B
D. none of these

The partial pressure exerted by the water vapors is called

A. tension

B. aqueous tension

- C. aqueous pressure
D. all of these

The mole fractions of a gas multiplied by the total pressure of the mixture is called ___ of a gas

A. partial volume

B. partial pressure

- C. partial temperature
D. number of moles

The value of Van Der Waals constant 'b' for Hydrogen gas is

A. . 266

- B. . 366
C. . 318
D. . 562

Molecules of ___ can collide among themselves and exchange energy

- A. solids
B. liquids
C. gases

D. both B & C

this gas cannot be liquefied by Linde's method

- A. methane
B. carbon dioxide
C. hydrogen

D. helium

Which forces are very significant in non-polar molecules like Cl_2 , H_2 and noble gases

- A. dipole-dipole
B. induced dipole

C. London

D. spontaneous induced dipole

In Charles's Law, volume of gas is directly related to which factor?

A. Pressure

Temperature

- C. Volume
D. Number of moles

Which pair shows hydrogen bonding among them

- A. ammonia & carbon
B. acetone and Ker

C. acetone and chloroform

D. water & Neon

If pressure and volume of a gas are variable while temperature remains constant, this belongs to

A. Charles's law

B. Boyle's law

- C. Avogadro's law
D. Pascal's law

What is the value of universal gas constant in S.I. units?

A. 8.314Jmol⁻¹K⁻¹

- B. 8.314 dm³ atm mol⁻¹K⁻¹
C. 0.0821dm³ atm mol⁻¹ K⁻¹
D. 0.0821Jmol⁻¹K⁻¹

With the increasing molecular mass of hydrocarbons, they changes from

- A.gases to liquids
B.liquids to solids

C.both A & B

D.none of these

With the increasing molecular mass of hydrocarbons, they changes from

- A.gases to liquids
B.liquids to solids

C.both A & B

D.none of these

Critical pressure of Argon(Ar) is

A. 48 atm

- B. 33.5atm
C. 111.5atm
D. 73. Atm

If a gas is warmed by 1 C, it will ____ by 1/273 of its original volume

A. contracts

B. expands

GASES CHAPTER

- C. shrink
- D. squeezed

when P and T are kept constant, $V = R nT/P$ this is called

- A. Boyle's law
- B. Charles's law
- C. Avogadro's law**
- D. Pascal's law

The magnetic fields create low energy plasma which further create molecules in a _____ state

- A. stable
- B. metastable**
- C. parastable
- D. prestable

Greater the mass of gas taken, greater will be slope of straight line. Because greater the _____ greater will be volume occupied

- A. pressure
- B. temperature
- C. number of moles**
- D. all of these

At high altitudes, the pilots feel uncomfortable breathing because the partial pressure of oxygen is lower than

- A. 16 torr
- B. 159 torr**
- C. 158 torr
- D. 157 torr

Plasma includes ions

- A. protons
- B. electrons**
- C. neutrons
- D. all of these

Boyle's law is stated as: "The product of pressure and volume of a fixed amount gas at constant temperature is a _____ quantity

- A. variable
- B. constant**
- C. discreet
- D. decreasing

If we decrease temperature of a gas 2 times, its volume will

- A. increase 4 times
- B. decrease 4 times
- C. decrease 2 times**
- D. increase 2 times

The strength of London forces depends on size of

- A. electrons
- B. electronic cloud**
- C. lone pair on an atom
- D. poles of atoms

Which unit of pressure is commonly used by meteorologist

- A. atm
- B. pascal
- C. mm of Hg
- D. millibar**

The unit for pressure used in engineering work is

- A. torr
- B. atm
- C. pounds**
- D. Nm⁻²

The rate of diffusion of a gas having molar mass 32 as compared to H₂ gas will be

- A. 6 times
- B. 4 times
- C. one fourth**
- D. one eighth

For Boyle's law verification, If a graph is plotted between 1/V on x-axis and P on y-axis, _____ graph will be obtained

- A. curved**
- B. straight line
- C. zigzag
- D. none of these

There are very strong attractive forces due to close packing in _ -

- A. solids**
- B. liquids
- C. gases
- D. all of these

GASES CHAPTER

Critical temperature of ammonia is ___ C

- A. 31.14
- B. 13.24
- C. 132.44**
- D. 1.11

vapor pressure is measured by calculating difference in liquid pressure and

- A. mercury pressure
- B. glass pressure
- C. atmospheric pressure**
- D. container pressure

The least value of Van der Waals constant is of

- A. H₂**
- B. N₂
- C. CO₂
- D. C

Plasma is difficult to maintain at

- A. low temperature**
- B. high temperature
- C. low pressure
- D. high pressure

What is the value of universal gas constant in S.I. units?

- A. 8.314 Jmol⁻¹K⁻¹**
- B. 8.314 dm³ atm mol⁻¹K⁻¹
- C. 0.0821 dm³ atm mol⁻¹ K⁻¹
- D. 0.0821 Jmol⁻¹K⁻¹

Which of the following term is constant in Boyle's law?

- A. Pressure
- B. Temperature**
- C. Volume
- D. Density

Two cotton plugs soaked in HCl and NH₃ solutions are introduced in the open ends of glass tube ,1 cm long. Which gas travels fast

- A. HCl
- B. NH₃**
- C. equally
- D. both

Kinetic molecular theory was proposed by

- A. Berzelius
- B. Boltzmann
- C. Bernoulli**
- D. Maxwell

The density of liquids are ___ than gases but _____ to solids

- A. lesser, closer
- B. greater, closer**
- C. smaller, greater
- D. lesser, greater

If we decrease temperature of a gas 2 times, its volume will

- A. increase 4 times
- B. decrease 4 times
- C. decrease 2 times**
- D. increase 2 times

Joule-Thomson effect is used to ___ the temperature of a gas to liquefy it

- A. raise
- B. higher
- C. equalize
- D. lower**

Effusion is the movement of a gas through extremely small opening of molecular size into region of ___ pressure

- A. high**
- B. low**
- C. moderate
- D. same

In Hydrogen bonding, the O-atom of water molecule forms a ___ bond with H-atom of other molecule by sharing its ___ of electron

- A. ionic, one
- B. coordinate covalent, one lone pair**
- C. covalent, 2 lone pair
- D. all of these

Ammonia can form only one H-bond because of presence of

- A. 3 free electron
- B. one lone pair of electron**

GASES CHAPTER

- C. 5 electron in outer shell
D. none of these

The intermolecular forces are very weak in

- A. solids
B. liquids
C. gases
D. all of these

The intermolecular forces are very weak in

- A. solids
B. liquids
C. gases
D. all of these

The strength of London forces depends on size of

- A. electrons
B. electronic cloud
C. lone pair on an atom
D. poles of atoms

Which pair shows hydrogen bonding among them

- A. ammonia & carbon
B. acetone and Ker
C. acetone and chloroform
D. water & Neon

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Liquids

1 Pressure cooker works on which principle?

- A. Decrease in external pressure increase the boiling point
- B. Increase in external pressure decrease the boiling point
- C. Increase in external pressure increase the boiling point**
- D. None of these

2 Density of ice is _____?

- A. Higher than water
- B. Lower than water**
- C. Similar to water
- D. Higher than 1.59/cm³

3 At which temperature water has maximum density?

- A. 2°C
- B. 4°C**
- C. 0°C
- D. <0°C

4 Intermolecular distance is larger in _____?

- A. Ionic compounds
- B. Solids
- C. Covalent compounds
- D. Liquids**

5 The turbid liquid were also called liquid crystals due to presence of some degree of

- A. heat
- B. order**
- C. hotness
- D. coldness

6 Which of the following has greater polarizability?

- A. N₂
- B. Cl₂
- C. O₂
- D. I₂**

7 Liquids have _____?

- A. Definite shape
- B. Indefinite shape
- C. Definite volume
- D. None of these**

8 Which of the following forces are developed only for few moments?

- A. Dipole dipole forces
- B. Debye forces
- C. London dispersion forces**
- D. H-bonding

9 Which of the following is correct relationship between Boiling point and Intermolecular forces?

- A. Boiling point increases if intermolecular forces increases**
- B. Boiling point decreases if intermolecular forces increases
- C. Boiling point increases if intermolecular forces decreases
- D. Boiling point is not affected by intermolecular forces

10 Dipole forces has direct relation with the _____?

- A. Chemical properties of a substance
- B. Kinetic properties of substance
- C. Thermodynamic properties of substance**
- D. Nature of substance

11 How many times a covalent bond is stronger than H-Bond?

- A. 10
- B. 12
- C. 20**
- D. 2

12 What is the boiling point of Glycerine at 1 atm?

- A. 280°C
- B. 150°C
- C. 290°C**
- D. 110°C

13 K.E of the liquids is directly proportional to _____?

- A. Pressure
- B. Temperature**
- C. Mass
- D. Nature

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Liquids

14 Adhesive nature of honey and glue is due to presence of _____?

A. H-bonding

B. Dipole dipole forces

C. Ionic forces

D. Debye force

15 Select the most electronegative element among the following:

A. I

B. F

C. He

D. O

16 In non-polar molecules, the strength of London forces depends on number of

A. moles

B. molecules

C. atoms

D. all of these

17 Which of the following shows H-bonding?

A. $\text{CH}_3\text{CH}_2\text{OH}$

B. $\text{CH}_3\text{-O-CH}_3$

C. $\text{CH}_3\text{CH}_2\text{Cl}$

D. All of these

18 Which of the following has lower vapor pressure?

A. Glycerol

B. Isopentane

C. Ethanol

D. Both a and c

19 Evaporation is a _____ process?

A. Exothermic

B. Spontaneous

C. Non-Spontaneous

D. None of these

20 Which of the following would not mix with each other easily?

A. Water, ethanol

B. Water, acetone

C. Water, pentane

D. Water, chloroform

21 Liquids have _____?

A. Definite volume

B. Indefinite volume

C. Irregular volume

D. Changing volume

22 Space among the liquids is _____?

A. Lower than gases

B. Higher than solids

C. Lower than solids

D. Both A and B

23 At which temperature water boils at Murree Hills?

A. 50°C

B. 100°C

C. 98°C

D. 67°C

24 The densities of liquids are much _____ than gases but _____ to solids

A. smaller, closer

B. greater, closer

C. smaller, far away

D. greater, far away

25 The most electropositive element among the following is:

A. Li

B. Ca

C. Cs

D. Ba

26 The densities of liquids are much _____ than gases but _____ to solids

A. smaller, closer

B. greater, closer

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Liquids

- C. smaller, far away
- D. greater, far away

27 Boiling point of halogens _____ down the group?

- A. Increases**
- B. Decreases
- C. Remain same
- D. Shows abnormal behavior

28 Depending upon the nature of ordering, liquid crystals are divided into types

- A. more than 1
- B. two
- C. three**
- D. four

29 soap and detergents show cleansing action because of the presence of ____ of molecules

- A. opposite poles
- B. polar part**
- C. non polar part
- D. positive end

30 When NaCl dissolves in water, positive end of water surround the Cl⁻ ion and Negative end of water surrounds the Na⁺ end of salt, which forces are present between these ions and water molecule?

- A. Dipole Dipole forces
- B. Ion dipole forces**
- C. H-bond
- D. Debye force

31 Iodine has greater heat of sublimation than its family members due to presence of stronger?

- A. H-bonding
- B. London dispersion forces**
- C. Dipole-dipole force
- D. Chemical bonding

32 a liquid crystalline state exist between two temperatures i.e melting temperature and ____ temperature

- A. boiling
- B. freezing

D. all of these

33 Melting and boiling point of liquids depend upon ____-?

A. Motion of liquid molecules

B. Intermolecular forces between the molecules

- C. Kinetic energy of the molecules
- D. Mass of the molecules

34 Rate of diffusion of liquids is _____ than gases

- A. Lower**
- B. Higher
- C. Equal to
- D. All of these

35 What is IUPAC name of isopropyl alcohol

- A. 2 - propanol**
- B. 1 - propanol
- C. 2 - ethanol
- D. 2 - propane-1-ol

36 H-bonding is a type of _____?

- A. Chemical bonding
- B. Ion dipole force
- C. Dipole-dipole force**
- D. Polar force

37 What is the relationship between boiling point and External pressure?

A. Boiling point increases if external pressure is increased

- B. boiling point increases if external pressure decreases
- C. Boiling point is not affected by external pressure
- D. Boiling point decreases if external pressure increased

38 Which of the following has more evaporation rate at same temperature?

- A. Gasoline**
- B. Water
- C. Honey
- D. Ethanol

39 When a liquid is heated in a closed container, equilibrium is established between ?

- A. Liquid and Solid
- B. Liquid and Vapour**
- C. Liquid solid and vapour
- D. Liquid and vapour solid

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Liquids

40 In which of the following dipoles are not present ?

- A. Water
- B. HCl
- C. Noble gases**
- D. Chloroform

41 In which of the following dipoles are not present ?

- A. Water
- B. HCl
- C. Noble gases**
- D. Chloroform

42 On which factor boiling point of a liquid does not depends?

- A. External pressure
- B. Vapour pressure
- C. Amount of liquid**
- D. Intermolecular forces

43 H-Bonding act as a bridge between _____?

- A. Two electronegative atoms**
- B. Electronegative and H atoms
- C. Two H atoms
- D. None of these

44 Among halogens iodine is solid at room temperature while Br₂ is liquid and Cl₂ F are gases at room temperature, why?

- A. Due to stronger dipole forces
- B. Due to polarity
- C. Due to stronger London forces**
- D. Due to stronger Debye forces

45 The properties of liquid crystals are intermediate b/w crystals and

- A. anisotropic liquids
- B. nematic liquids
- C. isotropic liquids**
- D. liquids

46 All the halogens are _____ diatomic molecules

- A. polar
- B. non polar**
- C. reactive

D. non reactive

47 The amount of heat required to form vapors of one mole of a liquid at its boiling point is called as?

- A. Molar heat of fusion
- B. Molar heat of vapourization**
- C. Molar heat of sublimation
- D. Molar heat of Evaporation

48 Due to which of the following forces present in water aquatic life is protected in Cold climate ?

- A. Dipole dipole forces
- B. Debye forces
- C. H-bonding**
- D. London dispersion forces

49 Which of the following has least polarizability ?

- A. NH₃
- B. H₂O
- C. HF**
- D. CH₄

50 Which will evaporate faster; hot water in cup or cold water in a cup ?

- A. Cold water
- B. Hot water**
- C. Both evaporate at the same rate
- D. Both evaporate slowly

51 Water is considered as a Universal solvent because of which properties?

- A. Polar nature of water
- B. H-bonding
- C. Electronegativity difference
- D. All are correct**

52 Which of the following has higher boiling point?

- A. NH₃
- B. H₂O**
- C. HF
- D. CH₄

53 Maximum Hydrogen bonding is found in

- A. chlorine
- B. Ammonia
- C. water**
- D. hydrochloric acid

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Liquids



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54 Which of the substance has the highest melting point?

- A. CO₂
- B. H₂O
- C. NaCl
- D. MgO**

55 In a pressure cooker, boiling point of water is _____?

- A. Raised than the normal**
- B. Lower than the normal
- C. Lower than the freezing point
- D. All of these

56 Iodine has greater heat of sublimation than its family members due to presence of stronger?

- A. H-bonding
- B. London dispersion forces**
- C. Dipole-dipole force
- D. Chemical bonding

57 In proteins the H bonding is present between _____?

- A. C-H
- B. N-H**
- C. O-H
- D. Cl-H

58 Due to less polarizability of Fluorine, it boils at _____ °C

- A. -188.1**
- B. 188.1
- C. 184.4
- D. 184.4

59 Which type of forces are present between acetone and chloroform?

- A. H-bonding
- B. Dipole-Dipole forces**
- C. London dispersion forces
- D. Debye forces

60 Liquids have _____?

- A. Definite shape

B. Indefinite shape

- C. Definite volume
- D. None of these

61 Liquid crystal is discovered by

- A. Friedrich Reinitzer**
- B. William Crookes
- C. Bravis
- D. J J Thomson

62 At Mount Everest what would be the boiling point of water?

- A. 100°C
- B. 69°C**
- C. 98°C
- D. 102°C

63 The Diameter of DNA is maintained due to _____?

- A. Dipole dipole forces
- B. Induced dipole forces
- C. Chemical bond
- D. H-bond**

64 The side of the manometer in which mercury rises faces the

- A. atmosphere**
- B. liquid
- C. container
- D. gas

65 Ethane and hexane both are nonpolar molecules, but ethane has lower Boiling point than Hexane due to?

- A. Strong London forces in ethane due to smaller size
- B. Weak London forces in hexane due to larger size
- C. Strong London forces in hexane due to smaller size
- D. Strong London forces in hexane due to larger size**

66 Which of the following has lower vapor pressure?

- A. Glycerol
- B. Isopentane**
- C. Ethanol
- D. Both a and c

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Liquids

67 Evaporation is reverse of _____?

- A. Sublimation
- B. Freezing
- C. Melting
- D. Condensation**

68 Which instrument is used to measure the vapour pressure of a liquid?

- A. Barometer
- B. Manometer**
- C. Thermometer
- D. Sphygmometer

69 In which manner H-Bond is formed in HF molecule?

- A. Random
- B. Zigzag**
- C. Tetrahedral
- D. Linear

70 Boiling needs _____?

- A. Supply of heat in the start
- B. Supply of heat constantly**
- C. Supply of heat at the end
- D. Supply of heat variably

71 Pressure cooker works on which principle?

- A. Decrease in external pressure increase the boiling point
- B. Increase in external pressure decrease the boiling point
- C. Increase in external pressure increase the boiling point**
- D. None of these

72 Rate of diffusion of liquids is _____ than gases

- A. Lower**
- B. Higher
- C. Equal to
- D. All of these

73 H-Bonding act as a bridge between _____?

- A. Two electronegative atoms**
- B. Electronegative and H atoms
- C. Two H atoms

D. None of these

74 In which of the following water evaporate earlier?

- A. Cup
- B. Saucepan**
- C. Glass
- D. Small bowl

75 By increasing which of the following factor polarizability increases?

- A. Atomic radius**
- B. Ionization energy
- C. Ionic radius
- D. Hydration energy

76 At higher altitudes water boils at _____ Boiling point?

- A. Higher
- B. Lower**
- C. 100°C
- D. 0°C

77 Which one of the following is a strong acid?

- A. HF
- B. HI**
- C. HBr
- D. HCl

78 Ice occupies more space than liquid water by _____?

- A. 0.1
- B. 0.09**
- C. 0.05
- D. 0.06

79 Which will evaporate faster; hot water in cup or cold water in a cup?

- A. Cold water
- B. Hot water**
- C. Both evaporate at the same rate
- D. Both evaporate slowly

80 Lower boiling point of ether than water is due to the reason?

- A. Ether has strong intermolecular forces

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Liquids

B. Water has weak H-bonding

Ether has weak intermolecular forces

D. Water has lower vapour pressure

81 Instantaneous dipole-Induced dipole forces are also named as?

A. Debye forces

B. Dipole-dipole forces

C. London Dispersion forces

D. H-bonding

82 The forces present between the molecules are called as ?

A. Chemical bond

B. Intermolecular forces

C. Intra molecular forces

D. Strong forces

83 Greater heat of vapourization of water is due to the presence of which forces?

A. H-bonding

B. Dipole Dipole forces

C. Polar covalent bond

D. All of these

84 Structure of ice is similar to which of the following ?

A. Liquid water

B. Diamond

C. Graphite

D. Sucrose

85 Instantaneous dipole is produced when _____?

A. Two polar molecules comes closer

B. Two non polar molecules comes closer

C. Polar and nonpolar molecule comes closer

D. All of these

86 The forces present within a molecule are called as _____?

A. Intermolecular forces

B. Van der Waal forces

C. Chemical bond

D. Weak forces

87 The distillation which is carried out under reduced pressure is called as?

A. Pressure distillation

B. Reduced distillation

C. Vacuum distillation

D. Low boiling distillation

88 At 0°C what is the physical state of water?

A. Ice

B. liquid

C. Vapour

D. Both ice and liquid

89 The measurement of the extent to which electron cloud is distorted is termed as?

A. Polarizability

B. Molecularity

C. Induction

D. Dispersion

90 Which instrument is used to measure the vapour pressure of a liquid?

A. Barometer

B. Manometer

C. Thermometer

D. Sphygmometer

91 When heat is provided to a liquid it causes it to _____?

A. Contract

B. Decompose

C. Expand

D. Become Non volatile

92 In a vacuum distillation the boiling point of glycerin is reduced to _____?

A. 290°C

B. 110°C

C. 156°C

D. 210°C

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93 The force which holds the atoms within the molecule is called as _____?

- A. Intermolecular force
- B. Chemical bond**
- C. London force
- D. Polar force

94 Which of the following forces are strongest?

- A. Debye forces
- B. Dipole Dipole forces
- C. Induced dipole forces
- D. Metallic bond**

95 Which of the following is directional bond?

- A. Ionic bond
- B. Metallic bond
- C. H-bond**
- D. None of these

96 Which of the following are soluble in water?

- A. Small alcohols**
- B. Small carboxylic acids
- C. Acetone
- D. Butane

97 Which one of the following H-bond is strong?

- A. O-H
- B. N-H
- C. F-H**
- D. Cl-H

98 H bonding is not present in which of the following _____?

- A. DNA
- B. Proteins
- C. Carbohydrates
- D. Lipids**

99 Which molar heat has higher ΔH value?

- A. Heat of fusion
- B. Heat of vapourization
- C. Heat of sublimation**
- D. Heat of evaporation

100 Presence of Process of diffusion in liquids is due to _____?

- A. Definite volume
- B. Strong intermolecular forces
- C. Smaller distance
- D. Constant motion**

101 The temperature at which vapor pressure of a liquid becomes equal to external pressure or atmospheric pressure is called as ?

- A. Melting point
- B. Boiling point**
- C. Freezing point
- D. Sublimation point

102 Pressure cooker works on which principle?

- A. Decrease in external pressure increase the boiling point
- B. Increase in external pressure decrease the boiling point
- C. Increase in external pressure increase the boiling point**
- D. None of these

103 Density of ice is _____?

- A. Higher than water
- B. Lower than water**
- C. Similar to water
- D. Higher than $1.59/\text{cm}^3$

104 At which temperature water has maximum density?

- A. 2°C
- B. 4°C**
- C. 0°C
- D. $<0^\circ\text{C}$

105 The turbid liquid were also called liquid crystals due to presence of some degree of

- A. heat
- B. order**
- C. hotness
- D. coldness

106 Which of the following has greater polarizability?

- A. N_2
- B. Cl_2
- C. O_2
- D. I_2**

107 Liquids have _____?

- A. Definite shape

- B. Indefinite shape
- C. Definite volume
- D. None of these**

108 Which of the following is correct relationship between Boiling point and Intermolecular forces ?

- A. Boiling point increases if intermolecular forces increases**
- B. Boiling point decreases if intermolecular forces increases
- C. Boiling point increases if intermolecular forces decreases
- D. Boiling point is not affected by intermolecular forces

109 Dipole forces has direct relation with the _____?

- A. Chemical properties of a substance
- B. Kinetic properties of substance
- C. Thermodynamic properties of substance**
- D. Nature of substance

110 How many times a covalent bond is stronger than H-Bond?

- A. 10
- B. 12
- C. 20**
- D. 2

What are the basic particles of ice crystals

- A. atoms
- B. anions
- C. cations
- D. molecules**

Arrangement of atoms in Molecular Solids can be studied with the help of

- A. Gamma Rays
- B. X Rays**
- C. Spectrometry
- D. Electron Microscope

Brittleness of Ionic solids is due to the fact that Ions arrange themselves in way to,

- A. Attract each other
- B. Compress
- C. Repel**
- D. overlap each other

which one of them belongs to tetragonal system

- A. Bi
- B. Sn**
- C. Fe
- D. Zn

The smallest part of crystal lattice showing all the properties of a crystal is called as _____?

- A. Crystallite
- B. Unit cell**
- C. Unit crystal
- D. Monomer

The boiling point of water is lower than HF because of _____ hydrogen bonding

- A. strong
- B. moderate

- C. weak**
- D. constant

Which type of movement is shown by the atoms of the solid?

- A. Translational motion
- B. Vibrational motion**
- C. Rotational motion
- D. Linear motion

The energy is _____ when oppositely charged ions brought close to each other

- A. released**
- B. absorbed
- C. remain same
- D. constant

The nature of Binding Force in Ionic Crystals is

- A. Magnetic
- B. Repulsive
- C. Electrostatic**
- D. Weak

The covalent crystals having giant molecules are insoluble in all the solvents

- A. Silicone carbide
- B. diamond
- C. both A & B**
- D. none of these

in solid iodine, I-I bond distance is

- A. 77.1 pm
- B. 271.5 pm**
- C. 11 pm
- D. 166.7 pm

if 2 axes are of equal length and third is either shorter or longer than other two, all angles are 90°

- A. cubic system
- B. tetragonal system**
- C. triclinic system
- D. hexagonal system

The nature of amorphous solid is

- A. isotropic**

- B. anisotropic
- C. mesotrophic
- D. neotropic

Carbon dioxide is an Example of

- A. Ionic Solid
- B. Metallic Solid
- C. Molecular Solid**
- D. Covalent Solid

The Extension of structure in a crystalline solid is not

- A. Regular
- B. Geometrical
- C. Three-Dimensional
- D. None of these**

Cholesteryl Benzoate turns milky at

- A. 123°C
- B. 135°C
- C. 145°C**
- D. 179°C

Diamond is a bad conductor because of

- A. high density
- B. no free electron**
- C. tight structure
- D. transparent to light

Which of the following solids shows hydrogen bonding

- A. ionic
- B. metallic
- C. covalent
- D. molecular**

Crystalline Solids are made up of

- A. Atoms
- B. Molecules
- C. Ions**
- D. All of these

when water freezes at C, spaces occur between its molecules which results in its ____

- A. decrease in volume
- B. decrease in density**
- C. increase in density

- D. increase in volume

The existence of an element in more than one crystalline forms called

- A. isomerism
- B. allotropy**
- C. anisotropy
- D. all of these

In NaCl crystal, chloride ions present at the face center are distributed in

- A. One Unit Cell
- B. 8 Unit cells
- C. 4 Unit cells
- D. 2 Unit cells**

The shape of crystal in which it usually grows is called its

- A. size
- B. capacity
- C. habit**
- D. property

Which one of them is a good conductor of electricity

- A. ionic solids
- B. molecular solids
- C. network covalent solids
- D. metallic solids**

Melting Point of Non Polar Molecular solids are

- A. High
- B. Low**
- C. Sharp
- D. None of these

Boiling Points of Polar Molecular solids are

- A. Low
- B. Moderate
- C. High**
- D. Cannot be predicted

Ancient glass becomes milky due to

- A. refraction
- B. crystallization**
- C. volatilization
- D. dispersion

Which one of them have high melting point?

- A. diamond**
- B. sulphur
- C. ice
- D. zinc

Angles in a Unit Cell are denoted by

- A. x,y,z
- B. a,b,c
- C. α , β , γ**
- D. i, j, k

Energy in formation of a crystal lattice is

- A. Absorbed
- B. Released**
- C. Dependent on Crystal Size
- D. None of these

Crystalline Solids can be converted into amorphous solids by

- A. Sublimation
- B. Evaporation
- C. abrupt cooling**
- D. Hammering

Percentage of free space in a body centered cubic unit cell is

- A. .32**
- B. .34
- C. .28
- D. .3

In Powdered form the angles and faces in a crystal are

- A. Ruptured
- B. Changed
- C. Unchanged**
- D. None of these

NaNO_3 and CaCO_3 are

- A. allotropes
- B. amorphous

C. isomorphous

D. polymorphous

Which of the following is not an Ionic Solid

- A. NaCl
- B. KBr
- C. MgCl_2

Melting point of crystalline solids are

- A. Fixed**
- B. Variable
- C. have a range of value
- D. None of these

This is not a molecular solid

- A. sugar
- B. ice
- C. boron nitride**
- D. solid iodine

Sodium metal shows metallic luster is explained by

- A. diffusion of Na^+
- B. oscillation of loose electrons**
- C. excitation of free protons
- D. strong crystal lattice

Atoms in solids are

- A. Loosely Packed
- B. In random motion
- C. Excited
- D. Closely packed**

Which one of them is known as super cooled liquids?

- A. glass**
- B. diamond
- C. silica
- D. carbon

The temperature at which one crystalline form changes to other is called _temperature

- A. critical
- B. absolute
- C. transition**
- D. none of these

Structure of a Crystal is changed due to

- A. Cooling
- B. Heating
- C. Impurity**
- D. None of these

Metals look shiny as light falls on metal surface collide with mobile electrons and make them __ these electron gives light when _____

- A. neutral, Excited
- B. excited, de-excited**
- C. de-excited, excited
- D. none of these

Anisotropy is a property of crystal based on its

- A. Chemical Properties
- B. Lattice Structure
- C. Physical Properties**
- D. Density

Structure of a Crystal is changed due to

- A. Cooling
- B. Heating
- C. Impurity**
- D. None of these

Ice is an example of

- A. Polar Molecular Solid**
- B. Non-Polar Molecular Solid
- C. Ionic Solid
- D. Covalent Solid

Isomorphism is exhibited by

- A. Molecular crystals
- B. covalent solids
- C. Ionic Crystals**
- D. Metallic solids

Which of the following is an Isomorph of Copper

- A. Zn
- B. Cd
- C. Ag**
- D. Mn

The solids which does not possess the regular arrangement of atoms are called as ____?

- A. Amorphous solids**
- B. Crystalline solids
- C. Polymorphic solids
- D. Isomorphous solids

which one of them can conduct electricity in solid state

- A. diamond
- B. graphite**
- C. Nail
- D. Iodine

which one the characteristic of Ionic solids ?

- A. high vapor pressure
- B. good conductivity
- C. low melting point
- D. solubility in polar solvents**

Structure of a Crystal is changed due to

- A. Cooling
- B. Heating
- C. Impurity**
- D. None of these

The shape of KNO_3 above 128°C is

- A. cubic
- B. orthorhombic
- C. rhombohedral**
- D. tetragonal

Carbon dioxide is an Example of

- A. Ionic Solid
- B. Metallic Solid
- C. Molecular Solid**
- D. Covalent Solid

The temperature at which one crystalline form changes to other is called _temperature

- A. critical
- B. absolute
- C. transition**
- D. none of these

The transition temperature of all allotropic forms of an element are always less than its

- A. freezing point
- B. melting point**
- C. boiling point
- D. none of these

if 2 axes are of equal length and third is either shorter or longer than other two, all angles are 9

- A. cubic system
- B. tetragonal system**
- C. triclinic system
- D. hexagonal system

Molecular Solids are held together by weak intermolecular forces called

- A. Van der Waal forces
- B. Dipole Dipole Interaction
- C. Both A and B**
- D. Electrostatic Forces

In Rhombohedral system, all three angles lies between _degree

- A. 9 & 45
- B. 9 & 2**
- C. 9 & 12
- D. 12 & 18

Anisotropy is a property of crystal based on its

- A. Chemical Properties
- B. Lattice Structure
- C. Physical Properties**
- D. Density

The smallest part of the crystal lattice has all the properties of the entire crystals, this is called

- A. unit
- B. unit cell**

- C. unit crystal
- D. all of these

Lattice Points are also called

- A. space lattice
- B. crystal lattice
- C. lattice sites**
- D. Lattice location

grey and white tin co-exist at temperature

- A. 128 C
- B. 13.2 C**
- C. 32-38 C
- D. 95.5 C

London force of interaction forms crystals

- A. covalent crystals
- B. ionic crystals
- C. molecular crystals**
- D. metallic crystals

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is an example of crystal system

- A. triclinic**
- B. tetragonal
- C. cubic
- D. rhombohedral

Ionic solids exist in three dimensional array which is called

- A. unit cell
- B. lattice**
- C. system
- D. all of these

when water freezes to ice, it occupies ____ more space

- A. 0.9 g/cm^3**
- B. 0.1 g/cm^3
- C. 0.12 g/cm^3
- D. 0.13 g/cm^3

Glass is an example of

- A. ionic solid
- B. covalent solid
- C. pseudo solid
- D. semisolid

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symmetry is repetition of ____ when a crystal rotates at 36 along its axis

- A. faces
- B. edges
- C. angles
- D. all of these**

Solidified Noble gases contains

- A. Polar molecules
- B. Polar atoms**
- C. Non Polar atoms**
- D. None of these

The identical number of layers in cubic and hexagonal closest packing are

- A. First three
- B. first two**
- C. only one
- D. first four

Which of the following is an Isomorph of Copper

- A. Zn
- B. Cd
- C. Ag**
- D. Mn

Thermal conductivity of graphite is greater when mobile electron are moving _ to its layers

- A. perpendicular
- B. right angle
- C. parallel**
- D. all of these

To conduct electricity through Ionic Solid, ions should be

- A. Excited
- B. Energized
- C. Free**
- D. In random Motion

Sulphate ion is

- A. Triangular Planner
- B. Cubic
- C. Cubic Face Centred

D. Tetrahedral

Hydrogen bonding is involved in

- A. cleansing action of soap
- B. biological molecule
- C. solubility
- D. all of these**

The size and shape of a crystal depends upon some crystallographic elements which are

- A. 3
- B. 4
- C. 6**
- D. 8

The most symmetrical crystal system

- A. triclinic**
- B. tetragonal
- C. cubic
- D. rhombohedral

Classification of Solids is based upon the arrangement of

- A. Molecules
- B. Atoms
- C. Ions**
- D. All of these

which one the characteristic of Ionic solids ?

- A. high vapor pressure
- B. good conductivity
- C. low melting point
- D. solubility in polar solvents**

which of the following solids is isotropic

- A. ionic solids
- B. molecular solids
- D. metallic solids

Number of Electron in Na⁺ Ion are

- A. 11
- B. 9
- C. 10**

D. 12

The atomic ratio of isomorphs of ZnSO_4 , and NiSO_4 is

- A. 2:1
- B. 2:01:04
- C. 1:01:04**
- D. 1:1

Energy released when one mole of an ionic crystal is formed is

- A. Activation energy
- B. Potential energy
- C. Energy of formation
- D. Lattice Energy**

Atoms arranged in regular and repeating manner is the characteristic of

- A. ionic solids
- B. molecular solids
- C. crystalline solids**
- D. covalent solids

The shape of KNO_3 above 128 C is

- A. cubic
- B. orthorhombic
- C. rhombohedral**
- D. tetragonal

Isomorphism is exhibited by

- A. Molecular crystals
- B. covalent solids
- C. Ionic Crystals**
- D. Metallic solids

The molecules of CO_2 in dry ice form

- A. covalent crystals
- B. ionic crystals
- C. metallic crystals
- D. molecular crystals**

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- B. melting point**
- C. boiling point
- D. none of these

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- B. Cuboid
- C. Octahedron**
- D. Cube

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- C. rhombohedral**
- D. tetragonal

Structure of a Crystal is changed due to

- A. Cooling
- B. Heating
- C. Impurity**
- D. None of these

which one the characteristic of Ionic solids ?

- A. high vapor pressure
- B. good conductivity
- C. low melting point
- D. solubility in polar solvents**

The solids which does not possess the regular arrangement of atoms are called as ____?

- A. Amorphous solids**
- B. Crystalline solids
- C. Polymorphic solids
- D. Isomorphous solids

Which of the following is an Isomorph of Copper

- A. Zn
- B. Cd
- C. Ag**
- D. Mn

Isomorphism is exhibited by

- A. Molecular crystals
- B. covalent solids
- C. Ionic Crystals**
- D. Metallic solids

The lattice energy of KBr is _____ KJ/ mol

- A. -833
- B. -665**
- C. -895
- D. -728

Ice is an example of

A. Polar Molecular Solid

B. Non-Polar Molecular Solid

C. Ionic Solid

D. Covalent Solid

Structure of a Crystal is changed due to

A. Cooling

B. Heating

C. Impurity

D. None of these

Ice is an example of

A. Polar Molecular Solid

B. Non-Polar Molecular Solid

C. Ionic Solid

D. Covalent Solid

Anisotropy is a property of crystal based on its

A. Chemical Properties

B. Lattice Structure

C. Physical Properties

D. Densit

Metals look shiny as light falls on metal surface collide with mobile electrons and make them _____ these electron gives light when _____

A. neutral. Excited

B. excited, de-excited

C. de-excited, excited

D. none of these

The temperature at which one crystalline form changes to other is called _temperature

A. critical

B. absolute

C. transition

D. none of these

The solids which does not possess the regular arrangement of atoms are called as ____?

A. Amorphous solids

B. Crystalline solids

C. Polymorphic solid

D. Isomorphous solids

Which one of them is known as super cooled liquids?

A. glass

B. diamond

C. silica

D. carbon

Atoms in solids are

A. Loosely Packed

B. In random motion

C. Excited

D. Closely packed

Sodium metal shows metallic luster is explained by

A. diffusion of Na⁺

B. oscillation of loose electrons

C. excitation of free protons

D. strong crystal lattice

Cl-Cl Bond distance is 5.63 Å, While Na-Cl bond distance is

A. Half of 5.63

B. double to 5.63

C. 5.63

D. None of these

This is not a molecular solid

A. sugar

B. ice

C. boron nitride

D. solid iodine

Melting point of crystalline solids are

A. Fixed

B. Variable

- C. have a range of value
- D. None of these

Which of the following is not an Ionic Solid

- A. NaCl
- B. KBr
- C. MgCl₂
- D. CO**

NaNO₃ and CaCO₃ are

- A. allotropes
- B. amorphous
- C. isomorphous**
- D. polymorphous

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CHEMICAL KINETICS

1 Change in concentration of reactants and products can only be found by

- A. Physical methods
- B. Chemical Methods
- C. Physical and Chemical methods**
- D. None of These

2 dx/dt is rate of reaction expression where dx is

- A. Concentration
- B. Change in Concentration
- C. Very small change in Concentration**
- D. All of these

3 dx/dt is rate of change of concentration with respect to

- A. Temperature
- B. Pressure
- C. C. time**
- D. D. None of these

4 Half-life can be found out for a reaction of

- A. first order
- B. Second Order
- C. Any Order**
- D. Zero Order

5 The half-life of Uranium is 0

- A. 700 Million years
- B. 706 Million years
- C. 89 days
- D. 710 million year**

6 Reaction intermediate

- A. Cannot be Separated from reaction mixture
- B. Contain normal bonds
- C. can be isolated from reaction mixture
- D. Both B and C**

7 After the hydrolysis of ester the change in concentration of acid at different intervals is calculated by

- A. Titration with KMnO_4
- C. Titration With Standard**
- C. Distillation
- D. Evaporation of mixture

8 Rate of chemical reactions helps in designing industrial process which is

- A. Completed instantaneously
- B. Slow
- C. Economical**
- D. None of these

9 Type of reactants or product decides the nature of method adapted for finding

- A. Rate constant
- B. Enthalpy
- C. Temperature
- D. Rate of a Reaction**

10 The slope determined by drawing a right angled triangle drawn with tangent as hypotenuse will be same

- A. with different sizes of triangles drawn**
- B. at different point on curve
- C. at the start and end of curve
- D. All of these

11 Hydrolysis means reaction with

- A. Oxygen
- B. Hydrogen
- C. Water**
- D. Air

12 Zero order reactions do not depend upon concentration of

- A. products
- B. reactants**
- C. Ions
- D. Radicals

13 Higher order reactions has half-life

- A. same as first order
- B. Different from first order reactions
- C. Directly proportional to Concentration of reactants
- D. None of these**

14 Specific Rate constant is also known as

- A. Time Constant

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- B. relative rate constant
- C. Instantaneous rate constant
- D. velocity constant**

- 15 The rate equation is an
- . Experimental expression**
 - B. Theoretical expression
 - C. based on Hit and Trail
 - D. All Of these

- 16 Rate of reaction can be calculated by calculating
- A. Change in temperature
 - B. Change in pressure
 - C. Change in volume
 - D. Change in concentration**

- 17 Rate of reaction has
- A. No units
 - B. unit of Moles/dm³
 - C. Unit as Moles / litre
 - D. Unit as Moles/dm³s⁻¹**

- 18 Slope of the curve can be determined by
- A. Area under the curve
 - B. calculating length of curve
 - C. Drawing a tangent to the curve**
 - D. All of these

- 19 Specific Rate constant changes its value with
- A. Time Constant
 - B. Change in Temperature**
 - C. Change in Concentration
 - D. Change in Pressure

- 20 How much percentage of reactants is converted into products during half life period
- A. 40%
 - B. 70%
 - C. 50%**

- D. 30%

- 21 Unit for rate of reaction is
- A. Mole / litre
 - B. Moles / gram
 - C. Moles / Second
 - D. moles/dm³ s⁻¹**

- 22 Rate of reaction can have a value which is
- A. in fraction
 - B. Negative
 - C. Positive
 - D. All Of these**

- 23 In exothermic reactions forward reactions need
- A. More Energy
 - B. No energy
 - . Less Energy**
 - D. Catalyst

- 24 The change in concentration of reactants or products per unit time is
- A. rate constant
 - B. reaction speed
 - C. Rate of a reaction**
 - D. All of these

- 25 Hydrolysis of Tertiary Butyl bromide is a
- A. First order reaction
 - B. Zero Order Reaction
 - C. Pseudo Second Order
 - D. Pseudo First Order**

- 26 As the time interval approaches Zero the average and instantaneous rate become
- A. Negative
 - B. Zero**
 - C. Negligible
 - D. Positive

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27 As the hydrolysis of ester proceeds more and more acid is formed giving a

- A. Rising curve
- B. Falling Curve
- C. Straight line
- D. None of these

28 In the rate equation $R=k[A]^a [B]^b$, a and b as exponents decides

- A. Direction of reaction
- B. Extent of Reaction
- C. Order of Reaction
- D. Temperature of Reaction

29 The mechanism of reaction can be understood by

- A. Experimental details
- B. Balanced chemical equation
- C. Molar Ratio
- D. All of these

30 Instantaneous rate of reaction is the rate at any

- A. At Equilibrium
- B. one instant
- C. Given Temperature
- D. Given Pressure

31 A substance which does not appear in balanced chemical reaction is called

- A. Buffer
- B. Spectator Substance
- C. Reaction Intermediate
- D. None of these

32 Rate of a reaction is dependent on

- A. Reactant's Concentration
- B. Product Concentration
- C. Slowest Step
- D. All of these

33 In the rate equation $R=k[A]^a [B]^b$, order of reaction is

- A. $a \times b$
- B. $a-b$
- C. $b-a$
- D. $a+b$

34 Rate determining step of a chemical reaction which occur in more than one step depends upon the

- A. fastest step
- B. Slowest Step
- C. catalyst used
- D. Temperature of reaction

35 Physical methods of finding the rate of reaction always involve

- A. A catalyst
- B. A graph
- C. A calculating software
- D. None of These

36 In one second if the concentration changes from 0.1 to 0.25 then the rate will be

- A. 0.02 Moles/dm³s⁻¹
- B. 0.03 Moles/dm³s⁻¹
- C. 0.15 Moles/dm³s⁻¹
- D. 0.11 Moles/dm³s⁻¹

37 The half-life for first order reaction is independent of initial

- A. temperature
- B. pressure
- C. concentration
- D. all of these

38 The half-life for first order reaction is independent of initial

- A. temperature
- B. pressure
- C. concentration
- D. all of these

39 The slope determined by drawing a right angled triangle drawn with tangent as hypotenuse will be same

- A. with different sizes of triangles drawn
- B. at different point on curve
- C. at the start and end of curve
- D. All of these



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40 In a rate expression the Bracket [] indicates,

- A. Rate
- B. Time Concentration
- C. Reaction yield
- D. Concentration**

41 Rate of reaction can be studied graphically by plotting time and

- A. temperature
- B. Concentration**
- C. Pressure
- D. Activation Energy

42 Slope of the curve can be determined by

- A. Area under the curve
- B. calculating length of curve
- C. Drawing a tangent**
- D. All of these

43 Slope of the curve can be determined by

- A. Area under the curve
- B. calculating length of curve
- C. Drawing a tangent to the curve**
- D. All of these

44 Near completion of a chemical reaction average rate is

- A. Lower than instantaneous rate
- B. higher than instantaneous rate**
- C. Equal to instantaneous rate
- D. None of these

45 Spectrometry is used when reactants and products absorb

- A. Ultraviolet radiations
- B. Visible radiation
- C. Infrared radiation
- D. All of these**

46 The order of reaction for which half-life is inversely proportional to the concentration of reaction is

- A. Second Order**
- B. Zero Order

- C. First Order
- D. Third Order

47 Half Life $\propto 1/a^{(n-1)}$ where n is

- A. Number of reactant molecules
- B. Number of moles of reactants
- C. Number of moles of products
- D. Order of Reactions**

48 The slope of the curve obtained by plotting concentration change with time is actually

- A. Reaction time
- B. Reaction Speed
- C. Rate of reaction**
- D. All of these

49 Rate equation for the hydrolysis of Tertiary Butyl Bromide is independent of concentration of water as a reactant because

- A. It's in excess
- B. A solvent
- C. Solute
- D. Both A and B**

50 The rate of reaction between two specific time intervals is

- A. Instantaneous rate
- B. constant rate
- C. Average Rate**
- D. All of these

51 Slope of the curve can be determined by

- A. Area under the curve
- B. calculating length of curve
- C. Drawing a tangent to the curve**
- D. All of these

52 Rate of chemical reactions helps in designing industrial process which is

- A. Completed instantaneously

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B. Slow

C. Economical

D. None of these

53 The number of reacting molecules which changes their concentration in chemical change is called

A. Extent of a Reaction

B. Order of a Reaction

C. Specific rate of a reaction

D. Enthalpy of reaction

54 The average and instantaneous rate can be equal

A. Throughout the reaction

B. Near Reaction Completion

C. At one instant Only

D. At start of reaction

55 Drawing a graph between concentration change with time gives a

A. Straight line

B. parabola

C. Curve

D. Scattered graph

56 dx/dt is rate of change of concentration with respect to

A. Temperature

B. Pressure

C. time

D. None of these

57 For 3rd order reactions the half-life is

inversely proportional to square of concentration

B. directly proportional to cube of concentration

C. inversely proportional to concentration

D. directly proportional to concentration

58 If a graph is plotted with concentration data of a reactant in a chemical reaction the curve is

A. Rising

B. Falling

C. U shaped

D. None of these

59 Rate of chemical reactions helps in designing industrial process which is

A. Completed instantaneously

B. Slow

C. Economical

D. None of these

60 The positive sign in the rate expression for products depicts

A. Decrease in concentration

B. Increase in concentration

C. Increase in yield

D. decrease in temperature

61 The number of reacting molecules which changes their concentration in chemical change is called

A. Extent of a Reaction

B. Order of a Reaction

C. Specific rate of a reaction

D. Enthalpy of reaction

62 Drawing a graph between concentration change with time gives a

A. Straight line

B. parabola

C. Curve

D. Scattered graph

63 If the concentration of reactants in a chemical reaction is Unity the rate is called

A. Unit rate constant

B. specific rate constant

C. Relative rate constant

D. Average rate constant

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64 The average and instantaneous rate can be equal

- A. Throughout the reaction
- B. Near Reaction Completion
- C. At one instant Only**
- D. At start of reaction

65 against time instead of reactants the curve obtained will be

- A. Parabolic
- B. Rising**
- C. Falling
- D. Elliptical

66 In general Photochemical reactions are of order

- A. 1
- B. 3
- C. 2
- D. 0**

67 Rate constant is denoted by?

- A. k**
- B. kr
- C. kv
- D. ks

68 Conductivity of a solution changes with change in

- A. Reactant Ions Concentration**
- B. Temperature of mixture
- C. Adding an Impurity
- D. By catalyst

69 The rate of reaction for the hydrolysis of ester is

- A. High
- B. Low
- C. Moderate**
- D. Zero

70 Order of reaction can be determined

A. Theoretically

B. Experimentally

- C. Summing up the exponents of rate equation
- D. All of these

71 Reaction which are completed in steps must contain

- A. Rate determining Step
- B. Slowest step
- C. fastest step
- D. Both A and B**

72 When rate of reaction is measured by the amount of radiation absorbed it is called

- A. Optical Rotation method
- B. Electrical Conductivity method
- C. Refractometry Method
- D. Spectrometry**

73 If the time interval is very small for determining the rate of a reaction the values of average and instantaneous rate

- A. are both Zero
- B. Very close to each other**
- C. differs by a large number
- D. are negative

74 As reaction starts instantaneous rate is

- A. Higher than Average rate**
- B. Lower Than average rate
- C. equal to average rate
- D. None of these

75 With the passage of time rate of reaction always

- A. Increases
- B. Remains constant
- C. Decreases**
- D. Increases exponentially

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CHEMICAL KINETICS

76 If a graph is plotted with concentration data of a reactant in a chemical reaction the curve is

- A. Rising
- B. Falling**
- C. U shaped
- D. None of these

77 For 3rd order reactions the half-life is

concentration

- B. directly proportional to cube of concentration
- C. inversely proportional to concentration
- D. directly proportional to concentration

78 In one second if the concentration changes from 0.1 to 0.25 then the rate will be

- A. 0.02 Moles/dm³s⁻¹
- B. 0.03 Moles/dm³s⁻¹
- C. 0.15 Moles/dm³s⁻¹**
- D. 0.11 Moles/dm³s⁻¹

79 Change in concentration of reactants and products can only be found by

- A. Physical methods
- B. Chemical Methods
- C. Physical and Chemical**
- D. None of These

80 dx/dt is rate of reaction expression where dx is

- A. Concentration
- B. Change in Concentration
- D. All of these

81 Half-life can be found out for a reaction of

- A. first order
- B. Second Order
- C. Any Order**
- D. Zero Order

82 The positive sign in the rate expression for products depicts

- A. Decrease in concentration
- B. Increase in concentration**
- C. Increase in yield
- D. decrease in temperature

83 Rate determining step is also called

- A. Critical step

B. Rate Limiting

- C. Final Step
- D. None of these

84 The half-life of Uranium is

- A. 700 Million years
- B. 706 Million years
- C. 89 days
- D. 710 million year**

85 Reaction intermediate

- A. Cannot be Separated from reaction mixture
- B. Contain normal bonds
- C. can be isolated from reaction mixture
- D. Both B and C**

86 After the hydrolysis of ester the change in concentration of acid at different intervals is calculated by

- A. Titration with KMnO₄
- B. Titration With Standard Alkali**
- C. Distillation
- D. Evaporation of mixture

87 The slope of the curve obtained by plotting concentration change with time is actually

- A. Reaction time
- B. Reaction Speed
- C. Rate of reaction**
- D. All of these

88 Rate of a reaction is dependent on

- A. Reactant's Concentration
- B. Product Concentration
- C. Slowest Step**
- D. All of these

Chemical bonding

Formation of Hydrogen molecule according to VBT theory involves overlap of

- A. 1s orbital**
- B. 2s orbital
- C. 2p orbital
- D. 2px orbital

Those elements, with electronic configuration of valence shell ns^2np^6 show little tendency to react chemically, are called

- A. lanthanides
- B. Actinides
- C. Alkali metals
- D. Noble gases**

In aluminum oxide, ions are present in the ratio 2:3, its formula is

- A. AlO
- B. Al_2O
- C. Al_2O_3**
- D. Al_3O_2

The valency of an atom will be one if there is a sufficient gap b/w first and second

- A. electron affinity
- B. ionization energy**
- C. electronegativity
- D. none of these

When we move from left to right in transition elements, the decrease is _____ due to intervening electrons

- A. large
- B. very large
- C. small**
- D. very small

The minimum amount of energy required to remove an electron from its gaseous atom to form an ion is known as

- A. electron affinity
- B. ionization energy**
- C. electronegativity
- D. potential energy

the transfer of electron from an atom of _____ I.E to other atom with _____ E.A is called ionic bond by Lewis

- A. high, low
- B. low, low
- C. low, high**
- D. high, high

The elements with intermediate value of ionization energy value are called

- A. metals
- B. non metals
- C. metalloid**
- D. transition elements

A bonding electron pair is attracted by _____ of atoms

- A. one nucleus
- B. both nuclei of atoms**
- C. lone pair
- D. shared pair of electron

When an electron is added, energy is released, so electron affinity is given the

- A. positive sign
- B. negative**
- C. neutral
- D. delta sign

Greater the amount of negative charge on an atom, the size of ion will also be

- A. smaller
- B. greater**
- C. higher
- D. lower

The electronic configuration of Ne-1 is

- A. $1s^2, 2s^2, 2p_x^2, 2p_y^2, 2p_z^2$**
- B. $1s^2, 2s^2, 2p_x^2,$
- C. $1s^2, 2s^2, 2p_x^2, 2p_y^1$
- D. $1s^2, 2s^2, 2p_x^2, 2p_y^2, 2p_z^1$

Chemical bonding

If the difference of electronegativity is 1.7 or more than that, the bond formed is said to be

A. Ionic bond

B. covalent bond

C. metallic bond

D. chemical bond

In energy terms, the elements at high energy state are

A. electronegative elements

B. electropositive

C. neutral elements

D. charged elements

Which of the following properties is not related to transition metals _____?

A. Complex formation

B. Color

C. Fixed valency

D. d-orbital

The shielding effect _____ from left to right in a period

A. decreases

B. increases

C. remains

D. no change

Energy is __ when an electron is added to the isolated gaseous atom

A. increased

B. released

C. decreased

D. absorbed

the tendency of of an atom to attract a shared electron pair towards itself is called

A. electron affinity

B. ionization energy

C. electronegativity

D. polarity

BH₃ has a geometry with H-B-H bond angles of 120°

A. linear

B. trigonal planar

C. tetrahedron

D. bent

In CCl₄, all C-Cl bonds are _____ but molecule is _____ overall

A. polar, nonpolar

B. nonpolar, neutral

C. polar, Neutral

D. neutral, on polar

The increase in atomic radii in _____ is due to increase in the number of shells and the screening effect

A. groups

B. periods

C. both A & B

D. none of these

The formation of coordination complex compounds formed by transition metals is explained by

A. Ligand field theory

B. crystal field theory

C. molecular orbital theory

D. both A & B

Metals have ionization energy value

A. Low

B. high

C. intermediate

D. neutral

The second ionization energy value of magnesium ion after the removal of second electron is

A. 135 KJ/mol

B. 145 KJ/mol

C. 155 KJ/mol

D. 773 KJ/mol

Metals have ionization energy value

A. Low

B. high

C. intermediate

D. neutral

In some cases during atomic orbital hybridization, ground state electrons promoted to excited states, as a result _____ increases

A. number of shells

Chemical bonding

- B. number of electrons
C. number of unpaired
 D. number of bonds

Electron affinity of an atom is the energy released when an electron _to an empty or partially filled orbital of an atom to form ____

- A. removed, cation
 B. added, cation
C. added, anion
 D. removed, anion

It is very _--to remove electron from a positively charged ion than a neutral atom due to increase in nuclear charge

- A. easy
difficult
 C. moderate
 D. none of these

The shielding effect _____ from left to right in a period

- A. decreases
 B. increases
C. remains
 D. no change

In chemical combination of H-atom with sodium. It gains an electron but in case of HF, H-atom

- A. gains 2 e-
B. lose 1e-
 C. lose 2e-
 D. gain 2e-

Sulphur-16 gets its stabilization by gaining 2 electron to become equal to

- A. neon
B. argon
 C. helium
 D. krypton

The good electron loser elements belongs to group

- A. 1A**
 B. 2A
 C. 3A
 D. 4A

According to VSEPR theory ,the repulsions are called

- A. joule repulsion
B. planks repulsion
C. Van der waals repulsion
 D. J.J.Thomson repulsion

Who was able to determine the distance b/w K⁺ and Cl⁻ in potassium chloride crystal

- A. Bohr's
B. Pauling
 C. Berzelius
 D. Rutherford

The increase in size of an anion is due to increase in repulsion of

- A. electron-proton
B. electron-electron
 C. electron-nucleus
 D. proton-nucleus

The unit of electron affinity is

- A. J/mol
B. KJ/mol
 C. KJ/atom
 D. J/atom

The gap in first, second and third ionization energy values helps to guess

- A. atomic number of an element
B. valency of an element
 C. charge on an atom
 D. atomic mass of an element

The molecular geometry of SO₂ is

- A. annular
 B. ring
C. angular
 D. linear

A _ bond may be polar or nonpolar

- A. Ionic bond
B. covalent bond
 C. metallic bond
 D. co-ordinate bond

Chemical bonding

The probability of finding an electron _____ even at large distances from the nucleus

- A. becomes one
- B. becomes zero
- C. never becomes**
- D. varies from to 1

The ionic radius of an ion is the radius of the ion while considering it to be _____ in shape

- A. oval
- B. round
- C. rectangular
- D. spherical**

All elements get their stabilization to attain nearest _____ configuration

- A. alkali metals
- B. noble metals
- C. alkaloids
- D. Noble gases**

As far as nuclear charge increases, the decrease in ionic radii will also

- A. larger**
- B. smaller
- C. remains same
- D. moderate

The valence electron pairs are arranged around the central atom to remain at maximum distance apart to keep repulsion

- A. maximum
- B. moderate
- C. zero
- D. minimum**

The chemical reactivities of elements, depend upon their characteristics electronic _____

- A. shields
- B. forces
- C.
- D. Shells

The ionic radius is always _____ than the atomic radius from which it is derived

- A. higher
- B. larger

- C. moderate
- D. smaller**

Ionization energies of atoms depends upon the factors

- A. atomic radius of atoms
- B. nature of orbital
- C. shielding effect of inner electrons
- D. all of these**

The electron affinity and atomic radius are _____ to each other

- A. directly proportional

- C. no effect
- D. remains constant

In the formation of HF, _____ donates the major of its electron among hydrogen atom or fluorine atom

- A. H-atom**
- B. F-atom
- C. both A & B
- D. none of these

Potassium has electronic configuration (2,8,8,1) and become ion by attaining configuration

- A. 2.8.8.2
- B. 2,8,8,**
- C. 2,8,1
- D. 2,8,8,8

The molecules like CH₄,CCl₄ or SiH₄ show attitude of non-polarity due to

- A. structure
- B. symmetry of structure**
- C. nature of structure
- D. charges on structure

Nitrogen N₂ molecule has 3 unpaired electron on each atom therefore it shows three bond that are

- A. 2 sigma & 1 pi bond
- B. 1 sigma & 2**
- C. 3 sigma
- D. 3 pi bond

The elements of which group show abnormally very low values of electron affinity in every period of periodic table

Chemical bonding

- A. group 2A
 B. group 5A
C. both A & B
 D. none of these

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Nyholm & Gillespie explains the shapes of molecules for

- A. transition elements
B. non transition elements
 C. only alkali metals
 D. Alkaline earth metals

Electron affinity is the measure of ____ for extra electron

- A. repulsion of electron
 B. attraction of electron
C. attraction of nucleus
 D. repulsion of nucleus

The total number of bond angles in methane are

- A. 2
 B. 3
 C. 5
D. 4

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 C. 5
D. 4

In general, atomic radii decreases from left to right in a period, due to increase in

- A. number of shells
B. nuclear charge
 C. shielding effect
 D. bond length

Formation of Hydrogen molecule according to VBT theory involves overlap of

- A. 1s orbital**
 B. 2s orbital
 C. 2p-orbital
 D. 2px orbital

Those elements, with electronic configuration of valence shell ns^2np^6 show little tendency to react chemically, are called

- A. lanthanides
 B. Actinides
 C. Alkali metals
D. Noble gases

In aluminum oxide, ions are present in the ratio 2:3, its formula in

- A. AlO
 B. Al_2O
C. Al_2O_3
 D. Al_3O_2

The valency of an atom will be one if there is a sufficient gap b/w first and second

- A. electron affinity
B. ionization energy
 C. electronegativity
 D. none of these

The minimum amount of energy required to remove an electron from its gaseous atom to form an ion is known as

- A. electron affinity
B. ionization energy

Chemical bonding

- C. electronegativity
 D. potential energy

the transfer of electron from an atom of _____ I.E to other atom with _____ E.A is called ionic bond by Lewis

- A. high, low
 B. low, low
C. low, high
 D. high, high

The elements with intermediate value of ionization energy value are called

- A. metals
 B. non metals
C. metalloid
 D. transition elements

A bonding electron pairs of is attracted by _ of atoms

- A. one nucleus
B. both nuclei of atoms
 C. lone pair
 D. shared pair of electron

When an electron is added, energy is released, so electron affinity is given the

- A. positive sign
B. negative
 C. neutral
 D. delta sign

Greater the amount of negative charge on an atom, the size of ion will also be

- A. smaller
B. greater
 C. higher
 D. lower

The electronic configuration of Ne-1 is

- A. $1s^2, 2s^2, 2p_x^2, 2p_y^2, 2p_z^2$**
 B. $1s^2, 2s^2, 2p_x^2,$
 C. $1s^2, 2s^2, 2p_x^2, 2p_y^1$
 D. $1s^2, 2s^2, 2p_x^2, 2p_y^2, 2p_z^1$

If the difference of electronegativity is 1.7 or more than that, the bond formed is said to be

- A. Ionic bond**
 B. covalent bond

- C. metallic bond
 D. chemical bond

In energy terms, the elements at high energy state are

- A. electronegative elements
B. electropositive
 C. neutral elements
 D. charged elements

The bonding pair of electron are equally shared b/w the atoms in

- A. HF
 B. HCl
 C. H₂O
D. H₂

The shielding effect _____ from left to right in a period

- A. decreases
 B. increases
C. remains
 D. no change

Energy is __ when an electron is added to the isolated gaseous atom

- A. increased
B. released
 C. decreased
 D. absorbed

the tendency of of an atom to attract a shared electron pair towards itself is called

- A. electron affinity
 B. ionization energy
C. electronegativity
 D. polarity

BH₃ has a geometry with H-B-H bond angles of 12

- A. linear
B. trigonal planar
 C. tetrahedron
 D. bent

In CCl₄, all C-Cl bonds are _____ but molecule is _____ overall

- A. polar, nonpolar**

Chemical bonding

- B. nonpolar. neutral
- C. polar. Neutral
- D. neutral, on polar

The increase in atomic radii in _____ is due to increase in the number of shells and the screening effect

- A. groups**
- B. periods
- C. both A & B
- D. none of these

The formation of coordination complex compounds formed by transition metals is explained by

- A. Ligand field theory
- B. crystal field theory
- C. molecular orbital theory
- D. both A & B**

Metals have ionization energy value

- A. Low**
- B. high
- C. intermediate
- D. neutral

The decrease in atomic radii is very prominent in

- A. second group
- B. second period**
- C. higher groups
- D. higher periods

Different type of hybridization takes place depending upon _____ of orbital's participating in hybridization

- A. number
- B. nature
- C. structure
- D. both A & B**

The unit of electronegativity is

- A. Joule**
- B. Kilojoules
- C. watt
- D. no unit

Which will need maximum energy to remove its one electron?

- A. $\text{Na} \rightarrow \text{Na}^+ + e^-$
- B. $\text{Ca} \rightarrow \text{Ca}^{++} + e^-$
- C. $\text{K} \rightarrow \text{K}^{++} + e^-$**
- D. $\text{c}^{2+} \rightarrow \text{c}^{3+} + e^-$

_____ is used to measure atomic radii

- A. Gamma rays
- B. alpha rays
- C. X-rays**
- D. beta rays

When an atom shares more than one electrons, the bond formed is

- A. single bond
- B. double bond
- C. triple bond
- D. both B & C**

BF_3 is an electron pair acceptor and complete its octet by accepting

- A. an electron
- B. pair of electron**
- C. 3 electron
- D. 4 electron

Which of the following remains the same in a period

- A. nuclear charge
- B. number of electrons
- C. shielding effect**
- D. ionization energy

The bond formed b/w homonuclear diatomic molecule is _____ in nature

- A. polar
- B. non-polar**
- C. may be polar or nonpolar
- D. ionic

The electron affinity of fluorine is less than chlorine as we move down the group, this deviation in behavior is due to its

- A. small size
- B. seven electron

Chemical bonding

- C. thick electronic cloud
D. all of these

Intervening electrons have a negative charge which repulses other electrons and ___ attraction b/w nucleus and electrons

- A. blocks
B. reduces
 C. increases
 D. enhances

The electronegativity difference of the elements can be related to the following property of bonds

- A. dipole moment
 B. bond energies
C. both A & B
 D. none of these

The outermost s and p orbitals of Noble gases are completely filled that why they are

- A. stable, reactive
B. stable ,uncreative
 C. unstable, reactive
 D. unstable ,uncreative

The ionic radii appeared to be a/an property

- A. associative
 B. multiplicative
C. additive
 D. all of these

The amount of energy evolved during the formation of hydrogen molecule is

- A. 436.45 KJ/mol
 B. 444.45 J mol
C. 436.45 J/mol
 D. 444.45 KJ/Mol

The energy released during the formation of crystal lattice of KCl is

- A. 39 KJ.mol
 B. 49 KJ/mol
 C. 59 KJ.mol
D. 69 KJ/mol

The four C-H bond of methane are formed by overlap of

- A. sp³-s**
 B. sp²-s²
 C. sp³-s²
 D. sp³-sp³

The bond formed b/w NH₃ and BF₃ is co-ordinate bond because NH₃ ___ due to presence of one lone pair

- A. acceptor
B. donor
 C. neutral
 D. negatively charged

Aluminum, has 3 electrons in its valence shell, therefore it has the ability to form ion

- A. monovalent
 B. divalent
C. trivalent
 D. tetravalent

The bond formed by the complete transfer of electron is called

- A. ionic bond**
 B. covalent bond
 C. metallic bond
 D. polar covalent bond

The ionization energy of group ___ shows abnormal trend

- A. 3A & 4A
 B. 5A & 6A
 C. 6A & 4A
D. 3A & 6A

In some cases during atomic orbital hybridization, ground state electrons promoted to excited states , as a result ___ increases

- A. number of shells
 B. number of electrons
C. number of unpaired electrons
 D. number of bonds

Chemical bonding

Electron affinity of an atom is the energy released when an electron _to an empty or partially filled orbital of an atom to form ____

- A. removed, cation
- B. added, cation
- C. added, anion**
- D. removed, anion

It is very __-to remove electron from a positively charged ion than a neutral atom due to increase in nuclear charge

- A. easy
- B. difficult**
- C. moderate
- D. none of these

In chemical combination of H-atom with sodium. It gains an electron but in case of HF, H-atom

- A. gains 2 e-
- B. lose 1e-**
- C. lose 2e-
- D. gain 2e-

The good electron loser elements belongs to group

- A. 1A**
- B. 2A
- C. 3A
- D. 4A

According to VSEPR theory, the repulsions are called

- A. joule repulsion
- B. planks repulsion
- C. Van der waals repulsion**
- D. J.J.Thomson repulsion

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THERMOCHEMISTRY

1) The imaginary surface separating system and surroundings is called

- A. Buffer
- B. Transition Zone
- C. Boundary**
- D. Intermediate state

2) The total of all the possible kind of energies in a system is called

- A. Total energy
- B. Kinetic Energy
- C. Potential Energy
- D. Internal Energy**

3) What is the value of enthalpy of neutralization when one mole of base reacts with one mole of acid?

- A. 60.5 kJ/mol
- B. -46.5 kJ/mol
- C. -70.5 kJ/mol
- D. -57.4 kJ/mol**

4) Heat absorbed by a substance at constant pressure is equal to ___?

- A. ΔG
- B. ΔH**
- C. ΔE
- D. $\Delta H - \Delta E$

5) Anything under test or observation in laboratory is called

- A. Surrounding
- B. System**
- C. Confined space
- D. None of these

6) Thermochemistry is very important to learn about

- A. Chemical Equilibrium
- B. Chemical Bonding
- C. Heat contents of a compound
- D. All of these**

7) When does it mean, when a reaction is exothermic?

- A. Energy content of product is more
- B. Energy content of reactant is less
- C. Heat is transferred from the system to surrounding**
- D. Heat is transferred from the Surrounding to the system

8) At which of the following temperature standard enthalpies are measured?

- A. 373K

B. 298K

- C. 350K
- D. All of these

9) Which one of the following has positive value?

- A. Heat lost by the system
- B. Work done on the system**
- C. Work done by the system
- D. Positive ΔE when heat lost by the system

10) Conversion of water into steam is a

A. Spontaneous Reactions

- B. Exothermic Reaction
- C. Reversible Reaction
- D. Combustion Reaction

11) In Thermodynamic terms boundary separates _____?

- A. Surrounding from the environment
- B. Reactants from contamination
- C. System from surrounding**
- D. Products from the surrounding

12) In the enthalpy relation, $\Delta H = (q)_p + \Delta(PV)$ the value $\Delta(PV)$ can be neglected for the reactions involving ___?

- A. Gases
- B. Liquids
- C. Liquids and**
- D. Liquids and Gases

13) The property of the system which does not depend upon the path followed by the system is called as ___?

- A. State function**
- B. Path function
- C. Dependent function
- D. Independent function

14) Which one of the following is the correct value for the enthalpy of formation of CO?

- A. -110 kJ/mol**
- B. -210 kJ/mol
- C. -111 kJ/mol
- D. None of these

15) Thermal energy is also called as _____?

- A. Internal energy

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THERMOCHEMISTRY

B. Temperature of a body

C. Kinetic energy

D. Heat energy

16) ΔH_f of which of the following can not be measured directly?

A. Al_2O_3

B. B_2O_3

C. CO

D. All of these

17) What pressure of Oxygen is maintained inside the bomb calorimeter?

A. 200 atm

B. 25 atm

C. 20 atm

D. 75 atm

18) Kinetic Energy is the sum of

A. Rotational & Vibrational

B. Translation & Rotational

C. Rotational, Vibrational

D. All of these

19) Law of conservation of energy is actually

A. Second law of thermodynamics

B. Third Law of Thermodynamics

C. First Law of Thermodynamics

D. Zeroth law of Thermodynamics

20) The only thing which can predict that reaction will be spontaneous or nonspontaneous is

A. Enthalpy Change

B. Free Energy of the system

C. Energy Change

D. Temperature Change

21) Kinetic energy of the molecule may be all of the following except?

A. Vibrational

B. Translational

C. Rotational

D. Static

22) Change in volume of a system depends only upon

A. Initial conditions

B. Final Conditions

C. Initial and final conditions

D. Path of the reaction

23) Heat of combustion is always a _____?

A. Exothermic reaction

B. Endothermic reaction

C. Spontaneous reaction

D. nonspontaneous reaction

24) A state function depends upon the _____?

A. Initial condition of the system

B. Final condition of the system

C. Path of the system

D. Both initial and final condition of the system

25) Falling water of a waterfall is an example of

A. Reversible Reaction

B. Spontaneous

C. Endothermic Reactions

D. All of these

26) What will be the value of work done at constant pressure in a pressure-volume system?

A. $w = PV$

B. $w = \Delta PV$

C. $w = P\Delta V$

D. $w = P + \Delta V$

27) State function is the _____ property of system.

A. Microscopic

B. Dependent

C. Macroscopic

D. Constant

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THERMOCHEMISTRY

28) The enthalpy change of a reaction which involves the formation of atom from its elements at S.T.P is called as

- A. Enthalpy of formation**
- B. Enthalpy of combustion
- C. Enthalpy of neutralization
- D. Enthalpy of sublimation

29) The value of heat of neutralization of strong acid with a strong base is always _____?

- B. Variable
- C. Depends on the strength of acid
- D. Depends on the strength of base

30) A piston in a cylinder is a part of

- A. System
- B. Surroundings**
- C. Boundary
- D. None of These

31) Which of the following process is an example of exothermic reaction?

- A. Evaporation
- B. Fusion
- C. Sublimation
- D. Respiration**

32) Chemical reactions involve change in heat energy and the study is called

- A. Electrochemistry
- B. Biochemistry
- C. Thermochemistry**
- D. Analytical Chemistry

33) Exothermic Reactions heat is

- A. Taken in
- B. Give out to surroundings**
- C. Neither given nor lost
- D. None of these

34) Which one of the following enthalpy change is always exothermic in nature?

- A. Enthalpy of combustion
- B. Enthalpy of solution**
- C. Enthalpy of formation

D. Enthalpy of atomization

35) The reactions that need energy are called as ____?

- A. Endothermic reactions**
- B. Exothermic reactions
- C. Exergonic reactions
- D. Heat releasing reactions

36) Which one of the following is not an example of state function?

- A. Temperature (T)
- B. Volume (V)
- C. Enthalpy (E)
- D. Heat (q)**

37) Formation of $ZnSO_4$ from blue copper sulphate solution is a spontaneous

- A. Oxidation reaction
- B. Addition Reaction
- C. Reduction Reaction
- D. Redox reaction**

38) Work done by the system is always

- A. Positive
- B. Zero
- C. Negative**
- D. Equals to Unity

39) The imaginary surface separating system and surroundings is called

- A. Buffer
- B. Transition Zone
- C. Boundary**
- D. Intermediate state

40) The total of all the possible kind of energies in a system is called

- A. Total energy
- B. Kinetic Energy
- C. Potential Energy
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THERMOCHEMISTRY

42) Heat absorbed by a substance at constant pressure is equal to ___?

- A. ΔG
- B. ΔH**
- C. ΔE
- D. $\Delta H - \Delta E$

43) Thermochemistry is very important to learn about

- A. Chemical Equilibrium
- B. Chemical Bonding
- C. Heat contents of a compound
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44) When does it mean, when a reaction is exothermic?

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- B. Work done on the system**
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- C. Reversible Reaction
- D. Combustion Reaction

48) In Thermodynamic terms boundary separates _____?

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- B. Reactants from contamination

D. Products from the surrounding

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- A. Gases

B. Liquids

C. Liquids and solids

D. Liquids and Gases

50) The property of the system which does not depend upon the path followed by the system is called as ___?

- A. State function**
- B. Path function
- C. Dependent function
- D. Independent function\

51) Which one of the following is the correct value for the enthalpy of formation of CO?

- A. 110kJ**
- B. -210kJ/mol
- C. -111kJ/mol
- D. None of these

52) Thermal energy is also called as _____?

- A. Internal energy
- B. Temperature of a body
- C. Kinetic energy
- D. Heat energy**

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- A. Al_2O_3
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- C. 20 atm**
- D. 75 atm

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- B. Translation & Rotational
- C. Rotational, Vibrational and Translation**
- D. All of these

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56) The only thing which can predict that reaction will be spontaneous or nonspontaneous is

- A. Enthalpy Change
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- C. Energy Change
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- B. Final Conditions
- C. Initial and final conditions**
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60) A state function depends upon the _____?

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- B. Final condition of the system
- C. Path of the system
- D. Both initial and final condition of the system**

61) Falling water of a waterfall is an example of

- A. Reversible Reaction
- B. Spontaneous Reactions**
- C. Endothermic Reactions
- D. All of these

62) Strong acid can be involved in a spontaneous reaction which is termed as

- A. Addition Reaction
- B. Substitution Reaction
- C. Neutralization Reaction**
- D. Reversible Reaction

63) What will be the value of work done at constant pressure in a pressure-volume system?

- A. $w = PV$
- B. $w = \Delta PV$
- C. $w = P\Delta V$**
- D. $w = P + \Delta V$

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- C. Macroscopic
- D. Constant

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- D. Depends on the strength of base

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- A. System
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- C. Boundary
- D. None of These

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- B. Fusion
- C. Sublimation
- D. Respiration**

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THERMOCHEMISTRY

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- C. Exergonic reactions
- D. Heat releasing reactions

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- A. Temperature (T)
- B. Volume (V)
- C. Enthalpy (E)
- D. Heat (q)**

74) Joule is the unit of ?

- A. Heat
- B. Energy
- C. Work
- D. All of these**

75) Which of the following law explains that net heat change in a reaction is same whether it takes place through two or more different ways?

- A. Born Haber cycle
- B. Joule's principle
- C. Hess's law**

D. Law of conservation of energy

76) For the reaction; $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$ the change in enthalpy is called as ____?

- A. Enthalpy of formation
- B. Enthalpy of neutralization**
- C. Enthalpy of Sublimation
- D. Enthalpy of reaction

77) The sum of potential and kinetic energy of a system is called

- A. Entropy
- B. Enthalpy
- C. Internal Energy**
- D. Heat Energy

78) The condition of a system is called as ____?

- A. Reaction conditions
- B. Concentration
- C. State of system**
- D. All of these

79) Temperature of the surrounding falls during ____?

- A. Endothermic**
- B. Exothermic reactions
- C. Exergonic reactions
- D. None of these

80) State functions are independent of

- A. Enthalpy Change
- B. Surroundings
- C. Path of the reaction**
- D. System

81) ΔH and ΔE have same values for the reaction in ____?

- A. Solid phase
- B. Gases phase
- C. Liquids, solids and solution**
- D. None of these

82) The reactions that release heat are called as ____?

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THERMOCHEMISTRY

A. Endothermic reactions

B. Exothermic reactions

C. Endergonic reactions

D. Heat gaining reactions

83) Evaporation of water is an example of?

A. Endothermic reaction

B. Exothermic reaction

C. Spontaneous reaction

D. Chemical; reaction

84) Production of Ammonia by Haber process is a

A. Endothermic Reaction

B. Exothermic Reaction

C. Irreversible Reaction

D. Redox Reaction

85) ΔH° is the standard enthalpy change of which of the following process?

A. When 1 mol of compound formed from its elements

B. When 1 mole of substance is dissolved to make a solution

C. When 1 mole of Reactants are converted into products

D. When 1 mole of salt is formed

86) Potential Energy of a system comes from the

A. Van der Waal forces

B. Bonds between molecules

C. Ionic Bonds

D. All of these

87) What does thermodynamics means?

A. Study of change in state of the system

B. Study of energy changes during a process

C. Study of material content of a system

D. All of these

88) Work done by the system is always

A. Positive

B. Zero

C. Negative

D. Equals to Unity

89) Enthalpy of a system is given as ____?

A. $\Delta H = qv + w$

B. $H = E + PV$

C. $H = qp + PV$

D. $H = E$

90) Formation of $ZnSO_4$ from blue copper sulphate solution is a spontaneous

A. Oxidation reaction

B. Addition Reaction

C. Reduction Reaction

D. Redox

91) Work done by the system is always

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92) The imaginary surface separating system and surroundings is called

A. Buffer

B. Transition Zone

C. Boundary

D. Intermediate state

93) The total of all the possible kind of energies in a system is called

A. Total energy

B. Kinetic Energy

C. Potential Energy

D. Internal Energy

94) What is the value of enthalpy of neutralization when one mole of base reacts with one mole of acid?

A. 60.5 kJ/mol

B. -46.5 kJ/mol

C. -70.5 kJ/mol

D. -57.4 kJ/mol

95) Heat absorbed by a substance at constant pressure is equal to ____?

A. ΔG

B. ΔH

C. ΔE

D. $\Delta H - \Delta E$

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THERMOCHEMISTRY

96) Anything under test or observation in laboratory is called

- A. Surrounding
- B. System**
- C. Confined space
- D. None of these

97) Thermochemistry is very important to learn about

- A. Chemical Equilibrium
- B. Chemical Bonding
- C. Heat contents of a compound
- D. All of these**

98) Thermochemistry is very important to learn about

- A. Chemical Equilibrium
- B. Chemical Bonding
- C. Heat contents of a compound
- D. All of these**

99) When does it mean, when a reaction is exothermic?

- A. Energy content of product is more
- B. Energy content of reactant is less
- C. Heat is transferred from the system to surrounding**
- D. Heat is transferred from the Surrounding to the system

100) At which of the following temperature standard enthalpies are measured?

- A. 373K
- B. 298K**
- C. 350K
- D. All of these

101) Which one of the following has positive value?

- A. Heat lost by the system
- B. Work done on the system**
- C. Work done by the system
- D. Positive ΔE when heat lost by the system

102) Conversion of water into steam is a

- A. Spontaneous Reactions**
- B. Exothermic Reaction
- C. Reversible Reaction
- D. Combustion Reaction

103) In Thermodynamic terms boundary separates _____?

- A. Surrounding from the environment
- B. Reactants from contamination
- C. System from surrounding**
- D. Products from the surrounding

104) Enthalpy change of solution of Na_2CO_3 is a _____ reaction?

- A. Exothermic reaction**
- B. Endothermic reaction
- C. Spontaneous reaction
- D. nonspontaneous reaction

105) Decomposition of Water into Hydrogen and oxygen is a

- A. Reversible Reaction
- C. Exothermic Reaction**
- B. Oxidation Reaction

106) Temperature and volume in an experiment are part of

- A. Surroundings
- B. System
- C. State of a system**
- D. All of these

107) An enthalpy cycle used to calculate the lattice energy is

- A. Hess Law
- B. Carnot Cycle
- C. Born haber Cycle**
- D. Haber's Process

108) Due to the formation of protective layer of oxides at Aluminum oxide surface, it is hard to burn it

- A. completely in air
- B. completely in oxygen**
- C. with carbon

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THERMOCHEMISTRY

D. with nitrogen

109) ΔH° is the standard enthalpy change of which of the following process?

- A. When 1 mol of compound formed from its elements
- B. When 1 mole of substance is dissolved to make a solution
- C. When 1 mole of Reactants are converted into products
- D. When 1 mole of salt is formed

110) What does thermodynamics means?

- A. Study of change in state of the system
- B. Study of energy changes during a process
- C. Study of material content of a system
- D. All of these

111) Potential Energy of a system comes from the

- A. Van der Waal forces
- B. Bonds between molecules
- C. Ionic Bonds
- D. All of these

112) Enthalpy of a system is given as ____?

- A. $\Delta H = qv + w$
- B. $H = E + PV$
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- D. $H = E$

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THERMOCHEMISTRY

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ELECTROCHEMISTRY

1 Current in electrolysis is carried through

- A. Free electrons
- B. Positive Ions
- C. Negative Ions
- D. Both B and C**

2 In balancing it is very important to identify the substance whose

- A. Physical state is changed
- B. oxidation number is changed**
- C. Enthalpy is changed
- D. All of these

3 In Down Cell anode is made up of

- A. Graphite**
- B. Copper
- C. Iron
- D. Silver

4 In Ion electron method, while balancing oxygen and Hydrogen atoms

- A. First balance Hydrogen
- B. First balance oxygen**
- C. balance both at the same time
- D. order doesn't matter

5 The platinum in SHE act as a

- A. Buffer
- B. Salt Bridge
- C. Electrical Conductor**
- D. All of these

6 In Electrochemical Cell Negative Ions are migrated towards

- A. Anode**
- B. Cathode
- C. Toward the bottom of the cell
- D. Towards the walls of the cell

7 In a galvanic cell, Zinc Sulphate left beaker acquires a

- A. A negative charge
- B. A net positive**
- C. Neutral
- D. None of these

8 Redox Reaction are actually transfer of

- A. Electrons**
- B. Charges
- C. Energy
- D. Hydrogen Ions

9 Current in electrolysis is carried through

- A. Free electrons
- B. Positive Ions
- C. Negative Ions
- D. Both B and C**

10 In Metal Hydrides the Oxidation number of Hydrogen is

- A. 1
- B. -1**
- C. zero
- D. 2

11 By accepting an electron Hydronium Ion is converted into

- A. Hydrogen gas
- B. Hydrogen Atoms**
- C. Water
- D. OH⁻ ions

ELECTROCHEMISTRY

12 In oxidation number method the final step to balance equation is

A. Hit and Trial Method

B. Inspection method

C. Identifying the reducing participants

D. Identifying the oxidized participants

13 In ion electron method, while balancing oxygen and Hydrogen atoms

A. First balance Hydrogen

B. First balance oxygen

C. balance both at the same time

D. order doesn't matter

14 Each half reaction in ion electron method is balanced by adding

A. Electrons on left hand side

B. Electron on right hand side

C. Both left or right hand side

D. None of these

15 Conversion of Electrical energy into chemical energy is

A. Mechanical Energy

B. Electromechanical Energy

C. Electrochemistry

D. Chemical Energy

16 In Metal Hydrides the Oxidation number of Hydrogen is

A. 1

B. -1

C. zero

D. 2

17 In electrochemical series reduction potential relates to only

A. Real Conditions

B. Standard Conditions

C. Positive Values

D. Negative Values

18 Electrode Potential is developed when a metal is dipped into

A. An Acid

B. A base

C. In its own ions

D. Water

19 After adding two half reactions in ion electron method

A. Net charge should be same on each side

B. Total number of atoms should be same

C. Total number of ions should be same

D. Both A and B

20 Platinum Foil is coated with finely divided platinum black in SHE to give larger

A. Mass

B. Volume

C. Surface Area

D. Temperature difference

21 For balancing oxygen and hydrogen atoms in acids or neutral solutions

A. Water can be added

B. H^+ ions can be added

C. Both A and B

D. OH^- ions can be added

ELECTROCHEMISTRY

22 The hydrogen gas bubbling into one molar solution of HCl has a pressure of

- A. 2atm
- B. 780 mmHg
- C. 19 Psi
- D. 1 atm**

23 In electrolysis of NaNO_3 , Nitrate ions are not discharged but

- A. Hydroxide Ions are discharged**
- B. Hydrogen Ions are Discharged
- C. Sodium Ions are Discharged
- D. None of these

24 The hydrogen gas bubbling into one molar solution of HCl has a pressure of

- A. 2atm
- B. 780 mmHg
- C. 19 Psi
- D. 1 atm**

25 In electrolysis of NaNO_3 , Nitrate ions are not discharged but

- A. Hydroxide Ions are discharged**
- B. Hydrogen Ions are Discharged
- C. Sodium Ions are Discharged
- D. None of these

26 In a Voltaic Cell Zinc Electrode is dipped in,

- A. Copper Sulphate
- B. Copper chloride
- C. Zinc Chloride
- D. Zinc Sulphate**

27 Electrolyte can be in

- A. Plasma state
- B. Solution or Fused state**
- C. Solid form
- D. Gaseous State

28 Electrolysis is carried out in

- A. A beaker
- B. Flask
- C. Evaporating Dish

D. Electrolytic Cell

29 Caustic Soda is made by electrolysis of concentrated solution of NaCl in

- A. Nelson's Cell
- B. Hg - Cell
- C. Castner Kellner Cell
- D. All of these**

30 Only those substances are written in Ion Electron Method

- A. which are oxidizing
- B. which are reducing
- C. which are not taking part in reaction
- D. Which will take part in reaction**

31 For a Voltaic Cell containing Zn and Copper electrodes the cell potential at standard conditions is

- A. 2 Volts
- B. 2.2 Volts
- C. 1 Volt
- D. 1.1 Volt**

32 Fused Bauxite is electrolyzed to get

- A. Sodium
- B. Magnesium
- C. Aluminum**
- D. Iron

33 Electrolysis of bauxite is done by

- A. Haber's Process
- B. Born Haber cycle
- C. Ion Exchange Method
- D. Hall-Heroult Process**

34 In Electrochemical Cell Positive Ions are migrated towards

- A. Anode
- B. Cathode**
- C. Toward the bottom of the cell
- D. Towards the walls of the cell

35 By accepting an electron Hydronium Ion is converted into

ELECTROCHEMISTRY

A. Hydrogen gas

B. Hydrogen Atoms

C. Water

D. OH⁻ ions

36 Salt bridge are used to give

A. Highly conductive path

B. To balance amount of - and + ion in both half cells

C. Both A and B

D. to increase resistivity

37 A voltaic cell produces electrical energy from

A. Potential energy

B. Chemical energy of Ions

C. Kinetic Energy

D. Free Electrons

38 Voltaic Cell can be converted into a Reverse galvanic Cell by

A. Changing positions of electrodes

B. Replacing Salt Bridge with a Wire

C. Providing an External Source of electricity

D. All of these

39 Electrolysis is a

A. Spontaneous Reactions

B. Oxidation-reduction reaction

C. Reduction Reaction

D. Oxidation Reaction

40 Salt Bridge is used for the purpose of

A. Producing Electrons

B. Circuit Completion

C. Increasing speed of electrons

D. All of these

41 Number of Electrons added on both sides of oxidation and reduction half reactions are balanced

A. At the start of procedure

B. Somewhere in the middle of balancing

C. After Adding two Half reactions

D. Before Adding two Half Reactions

42 In Electrochemical Cells Reduction takes place at

A. Anode

B. Cathode

C. At the surface of electrolyte

D. None of these

43 Salt Bridge contains

A. Aqueous Calcium Chloride

B. Molten zinc powder

C. KCl in a Gel

D. NaCl in a gel

44 In Electrolysis of NaNO₃, Na + is

A. Discharged at anode

B. Discharge at cathode

C. Do Not discharge

D. None of these

45 Oxidation Number can be

A. Positive

B. zero

C. Negative

D. All of these

46 Downs Cell is used for the electrolysis of

A. Aqueous NaCl

B. Aqueous NaNO₃

C. Fused NaCl

D. Fused NaNO₃

47 In a galvanic cell ,Zinc Sulphate left beaker acquires a

A. A negative charge

B. A net positive charge

C. Neutral

ELECTROCHEMISTRY

D. None of these

48 Hydroxide Ions are combine to give

- A. Alcohols
- B. Aldehydes
- C. Oxygen**
- D. Hydrogen

49 In Down Cells Cathode is made up of

- A. Graphite
- B. Copper
- C. Iron**
- D. Inert material

50 Standard Electrode potential is measured at

- A. 273K
- B. 293K
- C. 298K**
- D. 292K

51 In a voltaic cell ,two half cells actually separates

- A. Two electrolytes
- B. Anode and Cathode
- C. Oxidation Half cell and Reduction half Cell
- D. All of these**

52 In Down Cell anode is made up of

- A.**
- B. Copper
- C. Iron
- D. Silver

53 Standard electrode Potential is denoted by

- A. E
- B. E^{-1}
- C. $E^{\Delta 0}$**
- D. δ

54 For balancing oxygen and hydrogen atoms in acids or neutral solutions

- A. Water can be added
- B. H^+ ions can be added
- C. Both A and B**
- D. OH^- ions can be added

55 In Balancing Redox equation the first thing is to

- A. balance out all the Reactants
- B. Write the skeleton Equation**
- C. Calculate the oxidation Number
- D. Identify the elements

56 In oxidation number method of Balancing the first step is to write

- A. Oxidation number on Reactants
- B. Oxidation number on products
- C. Oxidation number for both reactants & Products**
- D. None of these

57 In Down Cell anode is made up of

- A. Graphite**
- B. Copper
- C. Iron
- D. Silver

58 The electrolysis of aqueous solutions of salt is complex because of the ability of water

- A. to vaporize
- B. to be oxidize and reduce simultaneously**
- C. to form hydrogen bonds
- D. All of these

58 Downs Cell is used for the electrolysis of

- A. Aqueous NaCl
- B. Aqueous $NaNO_3$
- C. Fused NaCl**
- D. Fused $NaNO_3$

59 What is the emf of Zn-Cu cell ?

- A. 1.01V**
- B. 1.23V
- C. 1.1V
- D. 1.44V

60 A voltaic cell produces electrical energy from

- A. Potential energy
- B. Chemical energy of Ions**
- C. Kinetic Energy
- D. Free Electrons

61 In Industry Caustic Soda is formed by electrolysis of

ELECTROCHEMISTRY

A. Dilute NaCl Solution

B. Fused NaCl

C. Concentrated NaCl Solution

D. NaCl Solution

62 Arrangement of metals on the basis of their electrode potentials on standard hydrogen scale is called

A. Reactivity Series

B. Potential Difference

C. Activated Potential

D. Electrochemical Series

63 Number of Electrons added on both sides of oxidation and reduction half reactions are balanced

A. At the start of procedure

B. Somewhere in the middle of balancing

C. After Adding two Half reactions

D. Before Adding two Half Reactions

64 Current in electrolysis is carried through

A. Free electrons

B. Positive Ions

C. Negative Ions

D. Both B and C

65 The reaction in Galvanic Cell is

A. Spontaneous

B. nonspontaneous

C. Irreversible

D. Endothermic

66 In Electrochemical Cell Positive Ions are migrated towards

A. Anode

B. Cathode

C. Toward the bottom of the cell

D. Towards the walls of the cell

67 Salt Bridge is used for the purpose of

A. Producing Electrons

B. Circuit Completion

C. Increasing speed of electrons

D. All of these

68 In a galvanic cell Copper compartment get net negative charge due to arrival of

A. Free charge from zinc sulphate solution

B. Electron

C. Protons

D. Zinc Ions

69 Decrease in Oxidation number is

A. Oxidation

B. Reduction

C. Both A and B

D. None of these

70 Downs Cell is used for the electrolysis of

A. Aqueous NaCl

B. Aqueous NaNO_3

C. Fused NaCl

D. Fused NaNO_3

71 Sum of oxidation numbers of all the molecules in a neutral atom is

A. Unity

B. negative

C. 1

D. Zero

72 Order of discharge of ions depends upon

A. Their temperature

B. Their concentration

C. Their Activation Energy

D. All of these

73 Each half reaction in ion electron method is balanced by adding

A. Electrons on left hand side

B. Electron on right hand side

C. Both left or right hand side

D. None of these

74 Conversion of Electrical energy into chemical energy is

A. Mechanical Energy

B. Electromechanical Energy

C. Electrochemistry

ELECTROCHEMISTRY

D. Chemical Energy

75 Fused Bauxite is electrolyzed to get

- A. Sodium
- B. Magnesium
- C. Aluminum**
- D. Iron

76 Two compartments of a galvanic cell are connected by

- A. A battery
- B. Electrical Wires
- C. A pipe
- D. Salt Bridge**

77 Oxidation Number of all the elements in free state is

- A. unity
- B. Positive
- C. Zero**
- D. Negative

78 Electrons in a Voltaic Cell flow from

- A. Cathode to Anode
- B. Anode to Cathode**
- C. Right to left
- D. None of these

79 In Down Cell anode is made up of

- A. Graphite**
- B. Copper
- C. Iron
- D. Silver

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- A. Aqueous NaCl
- B. Aqueous NaNO_3
- C. Fused NaCl
- D. Fused NaNO_3

81 Representing Reaction in Voltaic cell symbol used for salt bridge is

- A. \cap
- B. $::$**

C. \equiv

D. $||$

82 When a molten salt is electrolyzed the products are

- A. Complex
- B. Predictable**
- C. Unpredictable
- D. All of these

83 Electrolysis is a

- A. Spontaneous Reactions
- B. Oxidation-reduction reaction**
- C. Reduction Reaction
- D. Oxidation Reaction

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ELECTROCHEMISTRY

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B. Anode

C. Away from anode

D. None of these

97 In Electrochemical Cells oxidation takes place at

A. Cathode

B. Anode

C. Away from anode

D. None of these

S and p block elements



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1 The group 1 elements are named as alkali metals because

- A. Their oxides are basic
- B. Their oxide and hydroxides are water soluble
- C. Both a & b
- D. They are found in the earth

2 Which of the species has a permanent dipole moment?

- A. SF_4
- B. SiF_4
- C. BF_3
- D. XeF_4

3 Which one is radioactive?

- A. Cs
- B. Fr
- C. Li
- D. K

4 The element caesium bears resemblance with

- A. Ca
- B. Cr
- C. Both of the above
- D. None of the above

5 The second ionization potential of alkali metals are very high due to

- A. Being s-block elements
- B. Inert gas configurations
- C. ns1 electronic configuration
- D. Being metals

6 In diaphragm cell, hydrogen is discharged by the reduction of

- A. Water
- B. HCl
- C. Na^+
- D. NaCl

7 Which of the following are weakest intermolecular forces ?

- A. Dipole dipole forces
- B. Debye forces
- C. London dispersion forces
- D. H-bonding

8 The last subshell of alkaline earth metals

- A. 2s
- B. 1s
- C. 2d
- D. 3d

9 Which one can form complex?

- A. Na
- B. Cr
- C. Li
- D. K

10 The formula of Chile Saltpeter is

- A. NaNO_3
- B. CaCO_3
- C. $\text{Ba}(\text{NO}_3)_2$
- D. NH_4Cl

11 Nitrates of which pair of elements gives different products on thermal decomposition?

- A. Na, K
- B. Mg, Ca
- C. Li, Na
- D. Li, Ca

12 Shielding Effect increases _____?

- A. Down the Group
- B. Along period
- C. Diagonally
- D. only along d block

13 S-S bond is present in which of the ion pairs

- A. $\text{S}_2\text{O}_7^{2-}$, $\text{S}_2\text{O}_3^{2-}$
- B. $\text{S}_4\text{O}_6^{2-}$, $\text{S}_2\text{O}_7^{2-}$
- C. $\text{S}_2\text{O}_7^{2-}$, $\text{S}_2\text{O}_8^{2-}$
- D. $\text{S}_4\text{O}_6^{2-}$, $\text{S}_2\text{O}_3^{2-}$

14 More energy to remove an electron from _____?

- A. Half filled subshell
- B. Completely Filled Subshell
- C. Partially filled subshell
- D. Both a and b

15 Which one is not member of Alkali metals?

- A. Na
- B. K
- C. Cs
- D. Mg

16 Find the amphoteric oxide

- A. CaO_2
- B. CO_2

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S and p block elements



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C. SnO₂

D. SiO₂

17 Alkali and alkaline earth metals impart colours when heated over the burner, it is due to

- A. Smaller electronegativity of alkali metals
- B. The smaller ionic radius of these metals

C. De-excitation of electrons from higher energy levels to low energy level

D. Excitation of electrons from low energy levels to higher energy levels

18 Alkali metals group lies in _____?

- A. d-block
- B. s-block**
- C. f-block
- D. p-block

19 BeO is _____ in nature

A. Acidic

- B. Basic
- C. Amphoteric
- D. Neutral

20 Oxygen is not released on heating which of the compounds?

A. (NH₄)₂Cr₂O₇

- B. K₂Cr₂O₇
- C. Zn(ClO₃)₂
- D. KClO₃

21 The word Alkali means

- A. Base
- B. Basic salt
- C. Ashes**
- D. Spirit

22 Addition of 2% gypsum in cement

- A. Triggers hydration
- B. Triggers hydrolysis
- C. Prevents rapid hardening**
- D. All of the above

23 Lighter the Oxidation state of Metal more will be _____?

A. Acidity of metal

B. Polarization power

C. Basicity of metal

D. None of these

24 Ionization energy depends on which of the following factors?

- A. Size of atoms
- B. Nuclear Charge
- C. Number of shells
- D. All of these**

25 Which sulphates is not soluble in water?

- A. Sodium sulphate
- B. Potassium sulphate
- C. Zinc sulphate
- D. Barium sulphate**

26 Graphite has a structural similarity with

- A. B₂H₆
- B. B₄C
- C. B
- D. BN**

27 Which one of the following pairs shown the diagonal relationship in the periodic table?

- A. Sodium and Lithium
- B. Lithium and magnesium**
- C. Lithium and beryllium
- D. Boron and Beryllium

28 On which of the following factors Hydration Energy depend?

- A. Charge to size ratio**
- B. Polarizability of anions
- C. Polarization power of Cations
- D. All of these

29 Isoelectronic species have same

- A. electronic configuration**
- B. Ionic size
- C. Reactivity
- D. PH

30 The second ionization potential of alkali metals are very high due to

- A. Being s-block elements
- B. Inert gas configurations**
- C. ns¹ electronic configuration
- D. Being metals

31 Gypsum is applied to the soil as a source of

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S and p block elements



A. Ca and P

B. S and P

C. Ca and S

D. We could not apply

32 Addition of second Electron to a uni-negative ion always ?

A. An endothermic process

B. An exothermic process

C. Neutral process

D. Energy wasted

33 Crystals of $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ when exposed to air

A. Lose water and remain solid

B. Gain water and remain solid

C. Gain water and become liquid

D. Remains unchanged

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A. electronic configuration

B. Ionic size

C. Reactivity

D. PH

35 Ionization energy depends on which of the following factors?

A. Size of atoms

B. Nuclear Charge

C. Number of shells

D. All of these

36 Sodium is not observed in +2 oxidation state because of its

A. high first ionization potential

B. high second ionization potential

C. high ionic radius

D. high electronegativity

37 Which one of the following carbonate is water-insoluble?

A. Na_2CO_3

B. K_2CO_3

C. $(\text{NH}_4)_2\text{CO}_3$

D. CaCO_3

38 Ammonia may be prepared by heating ammonium chloride with

A. Water

B. NaCl

C. Aqueous sodium hydroxide

D. H_2SO_4

39 Which of the statement is incorrect for XeO_4 ?

A. four $\text{p}\pi\text{-d}\pi$ bonds are present

B. four $\text{sp}^3\text{-p}\sigma$ bonds are present

C. It has a tetrahedral shape

D. It has a square planar shape

40 The deliquescence is a property in which a solid

A. Absorbs moisture and remains solid

B. Absorbs moisture and turns to liquid form

C. Loses water of crystallization

D. Increases the number of water of crystallization

41 Which one is natron?

A. Na_2CO_3

B. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

C. $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$

D. NaHCO_3

42 Both Hydrogen and Halogens form

A. Ionic compounds mostly

B. Unipositive ion

C. Diatomic molecule

D. Stable bond with water

43 Ionic Salts of Group 1 elements can conduct Electricity when they are in ____?

A. Solid form

B. Molten form

C. Aqueous form

D. Both b and c

44 Which is the correct order of decreasing acidity of Lewis acids?

A. $\text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$

B. $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3$

C. $\text{BCl}_3 > \text{BF}_3 > \text{BBr}_3$

D. $\text{BBr}_3 > \text{BF}_3 > \text{BCl}_3$

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S and p block elements



45 Molten sodium burns with brilliant yellow flame in a chlorine atmosphere to form ____?

- A. NaCl
- B. NaOH
- C. NaBr
- D. ClO

46 The group 1 elements are named as alkali metals because

- A. Their oxides are basic
- B. Their oxide and hydroxides are water soluble
- C. Both a & b
- D. They are found in the earth

47 Which of the species has a permanent dipole moment?

- A. SF₄
- B. SiF₄
- C. BF₃
- D. XeF₄

48 Which sulphates is not soluble in water?

- A. Sodium sulphate
- B. Potassium sulphate
- C. Zinc sulphate
- D. Barium sulphate

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54 The second ionization potential of alkali metals are very high due to

- A. Being s-block elements
- B. Inert gas configurations
- C. ns¹ electronic configuration
- D. Being metals

55 In diaphragm cell, hydrogen is discharged by the reduction of

- A. Water
- B. HCl
- C. Na⁺
- D. NaCl

56 Which of the following are weakest intermolecular forces ?

- A. Dipole dipole forces
- B. Debye forces
- C. London dispersion
- D. H-bonding

57 The last subshell of alkaline earth metals

- A. 2s
- B. 1s
- C. 2d
- D. 3d

58 Which one can form complex?

- A. Na
- B. Cr
- C. Li
- D. K

59 The formula of Chile Saltpeter is

- A. NaNO₃
- B. CaCO₃
- C. Ba (NO₃)₂
- D. NH₄Cl

60 Nitrates of which pair of elements gives different products on thermal decomposition?

- A. Na, K

S and p block elements



- B. Mg, Ca
C. Li, Na
D. Li, Ca

61 Shielding Effect increases _____?

- A. Down the Group**
B. Along period
C. Diagonally
D. only along d-block

62 S-S bond is present in which of the ion pairs

- A. $\text{S}_2\text{O}_7^{2-}$, $\text{S}_2\text{O}_3^{2-}$
B. $\text{S}_4\text{O}_6^{2-}$, $\text{S}_2\text{O}_7^{2-}$
C. $\text{S}_2\text{O}_7^{2-}$, $\text{S}_2\text{O}_8^{2-}$
D. $\text{S}_4\text{O}_6^{2-}$, $\text{S}_2\text{O}_3^{2-}$

63 More energy to remove an electron from _____?

- A. Half filled subshell
B. Completely Filled Subshell
C. Partially filled subshell
D. Both a and b

64 Which one is not member of Alkali metals?

- A. Na
B. K
C. Cs

65 Find the amphoteric oxide

- A. CaO
B. CO_2
C. SnO_2
D. SiO_2

66 Alkali and alkaline earth metals impart colours when heated over the burner, it is due to

- A. Smaller electronegativity of alkali metals
B. The smaller ionic radius of these metals
C. De-excitation of electrons from higher energy levels to low energy level
D. Excitation of electrons from low energy levels to higher energy levels

67 Alkali metals group lies in _____?

- A. d-block
B. s-block
C. f-block

D. P-block

68 BeO is _____ in nature

- A. Acidic**
B. Basic
C. Amphoteric
D. Neutral

69 Oxygen is not released on heating which of the compounds?

- A. $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$**
B. $\text{K}_2\text{Cr}_2\text{O}_7$
C. $\text{Zn}(\text{ClO}_3)_2$
D. KClO_3

70 The word Alkali means

- A. Base
B. Basic salt
C. Ashes
D. Spirit

71 Addition of 2% gypsum in cement

- A. Triggers hydration
B. Triggers hydrolysis

D. All of the above

72 Lighter the Oxidation state of Metal more will be _____?

- A. Acidity of metal**
B. Polarization power
C. Basicity of metal
D. None of these

73 Which is the correct order of decreasing acidity of Lewis acids?

- A. $\text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$**
B. $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3$
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- A. SF₄**
- B. SiF₄
- C. BF₃
- D. XeF₄

77 Which of the following family is linked with plant ashes ?

- A. Nitrogen Family
- B. Alkali metals**
- C. Rare earth metals
- D. Oxygen Family

78 Binary compounds of halogens with alkali metals are called

- A. Oxides
- B. Hydrides
- C. Halides**
- D. Nitriles

79 One of them is not an alkali metal, Mark it

- A. Francium
- B. Caesium
- C. Rubidium
- D. Radium**

80 Metallic character depends on _____ ?

- A. Electron Affinity
- B. Ionization energy
- C. Electronegativity
- D. All of these**

81 Electrolysis of a dilute solution of NaCl results at the anode

- A. Sodium
- B. Hydrogen
- C. Chlorine
- D. Oxygen**

82 The Oxidation state of Alkali metals is?

- A. 1**
- B. 2
- C. 3

D. 0

83 Gypsum is applied to the soil as a source of

- A. Ca and P
- B. S and P
- C. Ca and S**
- D. We could not apply

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- C. (NH₄)₂CO₃
- D. CaCO₃**

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- A. Water
- B. NaCl

S and p block elements



C. Aqueous

D. H₂SO₄

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B. Na₂CO₃.1 H₂O

C. Na₂CO₃.H₂O

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B. BF₃ > BCl₃ > BBr₃

C. BCl₃ > BF₃ > BBr₃

D. BBr₃ > BF₃ > BCl₃

96 Molten sodium burns with brilliant yellow flame in a chlorine atmosphere to form _____?

A. NaCl

B. NaOH

C. NaBr

D. ClO

97 Which one is radioactive?

A. Cs

B. Fr

C. Li

D. K

98 The element caesium bears resemblance with

A. Ca

B. Cr

C. Both of the above

D. None of the above

99 To remove an electron from an atom is always _____?

A. Exothermic process

B. Endothermic Process

C. Neutral

D. Energy wasted

Transition elements



1 When we dissolve a compound of transition element in a solution of salt then it will form

- A. Simple ions
- B. Strong anions
- C. Double salts
- D. Complex ions

2 Lanthanides and actinides resemble in?

- A. Ionization state
- B. Oxidation state
- C. Electronic configuration
- D. Formation of complexes

3 Which oxidation is possessed by all the elements of group III B?

- A. 2
- B. 3
- C. 5
- D. 7

4 Which element has completely filled d subshell in both atomic and ionic form?

- A. Cr
- B. Fe
- C. V
- D. Zn

5 The central atom along with ligands is called

- A. Complex ion
- B. Coordination sphere
- C. Ligand
- D. Complex compound

6 In the production of wrought iron Mg Si and P are removed in the form of

- A. Oxides
- B. Silicates
- C. Slag
- D. Carbonates

7 Which of the following is typical transition metal?

- A. Sc
- B. Y
- C. Cd
- D. Co

8 In the production of wrought iron Mg Si and P are removed in the form of

- A. Oxides
- B. Silicates
- C. Slag
- D. Carbonates

9 When light is exposed to transition element then electrons jump from lower orbital's to higher orbitals in

- A. Orbitals of f-subshell
- B. Orbitals of d-subshell
- C. Orbitals of p-subshell

10 Non-typical transition elements belong to?

- A. 2B
- B. 3B
- C. 221B
- D. 1B

11 The species which donates electrons to the central metal atom in the coordination sphere is called

- A. Anion
- B. Cation
- C. The ligand is positively charged
- D. Acid

Which of the following 12 properties is not related to transition metals _____?

- A. Complex formation
- B. Color
- C. Fixed valency
- D. d-orbital

Transition elements



13 The total number of transition elements are?

- A. 48
- B. 32
- C. 58
- D. 28

14 Pure metal

- A. Corrode slowly
- B. Does not corrode easily
- C. Corrode rapidly
- D. None of these

15 Why Cr shows $3d^5 4s^1$ configuration instead of $3d^4 4s^2$?

- A. Because it is transition element
- B. Because it shows different oxidation states
- C. Because of extra stability of half filled d^5 system
- D. Because it is typical transition element

16 During bond formation d orbitals splits into _____ of orbitals ?

- A. 3 sets
- B. 4 sets
- C. 5 sets
- D. 2 sets

17 What is the general trend of melting and boiling point of transition elements along period?

- A. Increases from left to right
- B. Decreases from left to right
- C. Increases upto middle then decreases
- D. Decreases upto middle then increases

18 Location of transition elements is in between?

- A. s and p block
- B. d and f block
- C. s and f block
- D. None

19 $[\text{Fe}(\text{CN})_6]^{4-}$ is called as _____?

- A. Complex compound
- B. Transition element ion

C. Anion

D. Complex anion

20 Melting and boiling point of transition elements is higher due to _____?

- A. Higher binding energies
- B. Strong metallic bonding
- C. Hardness
- D. All of these

21 d block elements are also called as _____?

- A. Rare earth elements
- B. Outer transition elements
- C. Inner transition elements
- D. Typical transition elements

22 f-block elements are called ?

- A. inner transition
- B. outer transition
- C. both
- D. none

23 Pure metal

- A. Corrode slowly
- B. Does not corrode easily
- C. Corrode rapidly
- D. None of these

24 When we react an active metal like Al with less active element like Cu, it will form

- A. Dry cell
- B. Galvanic cell
- C. Electrolytic cell
- D. A and B

25 Non-typical transition elements belong to?

- A. 2B
- B. 3B
- C. 22IB
- D. 1B

26 d-block elements are present _____ in the periodic table ?

- A. Right of the periodic table

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Transition elements



B. Left of the periodic table

C. Bottom of periodic table

D. Between s and p block elements

27 Which of the following element can form interstitial alloy with transition elements?

A. Zn

B. Mg

C. H

D. All of these

28 What is the general trend of melting and boiling point of transition elements along period?

A. Increases from left to right

B. Decreases from left to right

C. Increases upto middle than decreases

D. Decreases upto middle than increases

29 Which metal is paramagnetic?

A. Cr

B. Mn

C. Fe

D. All of these

30 In pig iron the concentration of C-atom is

A. .12 — .25%

B. 2.5 — 4.5%

C. 2. — 4. %

D. .25 — 2.5%

31 During bond formation d orbitals splits into _____ of orbitals ?

A. 3 sets

B. 4 sets

C. 5 sets

D. 2 sets

32 Which one of the following has more unpaired electrons?

A. Mn

B. Cr

C. Cu

D. Zn

33 With impurities like P and S the open hearth furnace is lined with

A. SiO₂

B. Fe₂O₃

C. FeO

D. CaO, MgO

34 The transition elements belongs to Group VIB are

A. Zn ,Cd, Hg

B. Fe, Ru, Os

C. Mn, Te, Re

D. Cr, Mo, W

35 The elements having partially filled d and f orbitals are called as _____?

A. Transition elements

B. d-Block elements

C. f-block elements

D. All of these

36 Paramagnetic behavior of transition elements is due to presence of _____?

A. s electrons

B. Unpaired electrons

C. Paired electrons

D. Outer d electrons

37 Hardness of transition metals is due to _____?

A. More melting point

B. More electrons

C. Variable oxidation state

D. Higher binding energies

38 Transition elements for complexes because _____?

A. They have empty d orbitals

B. They show variable oxidation states

C. Both a and b

D. They have strong bonding

39 The Transition elements are located between

A. D and F block elements

B. Chalcogens and halogens

C. Lanthanides & actinides

D. S and P block elements

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Transition elements



40 lanthanides and actinides resemble in?

- A. ionization state
- B. Oxidation state
- C. electronic configuration
- D. Formation of complexes**

41 Compounds attracted by applied strong magnetic field are called

- A. Diamagnetic
- B. Paramagnetic**
- C. Good conductor
- D. Ferromagnetic

42 Location of transition elements is in between?

- A. S and p block**
- B. d and f block
- C. s and f block
- D. None

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- B. Chalcogens and halogens
- C. lanthanides & actinides
- D. S and P block elements**

46 Transition elements form complexes because _____?

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- B. They show variable oxidation states
- C. Both a and b**
- D. They have strong bonding

47 Paramagnetic behavior of transition elements is due to presence of _____?

- A. s electrons

B. Unpaired electrons

- C. Paired electrons
- D. Outer d electrons

48 The elements having partially filled d and f orbitals are called as _____?

- A. Transition elements
- B. d-Block elements
- C. f-block elements
- D. All of these**

49 Which one of the following has more unpaired electrons?

- A. Mn
- B. Cr**
- C. Cu
- D. Zn

50 Location of transition elements is in between?

- A. S and p block**
- B. d and f block
- C. s and f block
- D. None

51 Which of the following properties are associated with transition metals?

- A. Color
- B. Complex formation
- C. Use as catalyst
- D. All of these**

52 Which of the following is a non-typical transition element?

- A. Mn
- B. Zn**
- C. Cu
- D. Ag

53 Which one of the following pair shows abnormal electronic configuration?

- A. Sc, Zn
- B. Ni, Hg
- C. Mn, Cd
- D. Cu, Cr**

54 The central atom along with ligands is called

- A. Complex ion
- B. Coordination sphere**
- C. Ligand
- D. Complex compound

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Transition elements



55 What is the coordination number of Pt in $[\text{PtCl}(\text{NO}_2)(\text{NH}_3)_4]$

- A. 2
- B. 4
- C. 6**
- D. 7

56 The melting points and boiling points up to the middle of 3d- series

- A. Increases**
- B. Decreases
- C. Remain same
- D. No regular trend

57 The oxidation number in $[\text{MnO}_4]^{2-}$

- A. 7**
- B. -7
- C. 6
- D. -6

58 Brass and bronze have one metal in common?

- A. Zn**
- B. Hg
- C. Cu
- D. Fe

59 Which of these are coinage metals ?

- A. Au
- B. Ag
- C. Cu
- D. All of these**

60 Geometry of the complex compounds usually depends upon

- A. type of ligands
- B. types of hybridization in the elements of ligands
- C. hybridization of central metal**
- D. All of above

61 The total number of transition elements are?

- A. 48**
- B. 32
- C. 58
- D. 28

62 In complex compounds the oxidation number is written in

A. English

B. Greek

C. Roman numeral

D. Hebrew

63 Which one of the following has highest number of unpaired electrons?

- A. Fe^{2+}
- B. Mn^{2+}**
- C. Cr^{5+}
- D. Zn^{2+}

64 What is the coordination number of Cu metal in $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$?

- A. 3
- B. 4**
- C. 6
- D. 1

65 When the central atom of coordination compound is sp^3d^2 hybridization the expected geometry will be

- A. Tetrahedral
- B. Square planar
- C. Trigonal bipyramidal
- D. Octahedral**

66 Which of the following properties is not related to transition metals _____?

- A. Complex formation
- B. Color
- C. Fixed valency**
- D. d-orbital

67 $[\text{Fe}(\text{CN})_6]^{4-}$ is called as _____?

- A. Complex compound
- B. Transition element ion
- C. Anion
- D. Complex anion**

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Transition elements



68 The species which donates electrons to the central metal atom in the coordination sphere is called

- A. Anion
- B. Cation

C. The ligand is positively charged

- D. Acid

69 Those elements in which d or f orbitals are in the process of completion are called

A. Transition elements

- B. Typical transition elements
- C. Outer transition elements
- D. Inner transition elements

70 Paramagnetic behavior of transition elements is due to presence of _____?

- A. s electrons

B. Unpaired electrons

- C. Paired electrons
- D. Outer d electrons

71 The compound or complex ion which has a ring in its structure

- A. Polydentate ligand

B. Chelate

- C. Monodentate ligand
- D. Hydrate

72 What is the coordination number of Cu metal in $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$?

- A. 3
- B. 4**
- C. 6
- D. 1

73 Which of the following can form a chelate

- A. Ammine
- B. Oxalate**
- C. Carbonyl
- D. Cyano

74 Why Cr shows $3d^5 4s^1$ configuration instead of $3d^4 4s^2$?

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- B. Fe
- C. V
- D. Zn**

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Transition elements



81 Lanthanides and actinides are also called as _____?

- A. Rare earth elements
- B. Outer transition elements
- C. Non typical elements
- D. Typical transition elements

82 What is the coordination number of Pt in $[\text{PtCl}(\text{NO}_2)(\text{NH}_3)_4]$

- A. 2
- B. 4
- C. 6
- D. 7

83 An element becomes paramagnetic if it has _____?

- A. Electric field
- B. Paired valence electrons
- C. Magnetic moment
- D. None of these

84 When light is exposed to transition element then electrons jump from lower orbital's to higher orbitals in

- A. Orbitals of f-subshell
- B. Orbital's of d-sub shell
- C. Orbitals of p-subshell
- D. Both A & B

85 The species which donates electrons to the central metal atom in the coordination sphere is called

- A. Anion
- B. Cation
- C. The ligand is positively charged
- D. Acid

86 Which of the following properties is not related to transition metals _____?

- A. Complex formation
- B. Color
- C. Fixed valency
- D. d-orbital

87 The total number of transition elements are?

- A. 48
- B. 32
- C. 58
- D. 28

88 Why Cr shows $3d^5 4s^1$ configuration instead of $3d^4 4s^2$?

- A. Because it is transition element
- B. Because it shows different oxidation states
- C. Because of extra stability of half filled d^5 system
- D. Because it is typical transition element

89 point of transition elements along period?

- A. Increases from left to right
- B. Decreases from left to right
- C. Increases upto middle than decreases
- D. Decreases upto middle than increases

90 Which of the following element can form interstitial alloy with transition elements?

- A. Zn
- B. Mg
- C. H
- D. All of these

91 Which metal is paramagnetic?

- A. Cr
- B. Mn
- C. Fe
- D. All of these

92 In pig iron the concentration of C-atom is

- A. .12 — .25%
- B. 2.5 — 4.5%
- C. 2. — 4. %
- D. .25 — 2.5%

93 Which one of the following has more unpaired electrons?

- A. Mn
- B. Cr
- C. Cu
- D. Zn

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Transition elements



94 With impurities like P and S the open hearth furnace is lined with

- A. SiO₂
- B. Fe₂O₃
- C. FeO
- D. CaO, MgO**

95 The Transition elements are located between

- A. D and F block elements
- B. Chalcogens and halogens
- C. lanthanides & actinides
- D. S and P block elements**

96 Which of the following properties are associated with transition metals ?

- A. Color
- B. Complex formation
- C. Use as catalyst
- D. All of these**

97 Which of the following is a non-typical transition element?

- A. Mn
- B. Zn**
- C. Cu
- D. Ag

98 Which one of the following pair shows abnormal electronic configuration?

- A. Sc, Zn
- B. Ni, Hg
- C. Mn, Cd
- D. Cu, Cr**

99 The central atom along with ligands is called

- A. Complex ion
- B. Coordination sphere**
- C. Ligand
- D. Complex compound

100 Brass and bronze have one metal in common?

- A. Zn**
- B. Hg
- C. Cu
- D. Fe

101 Which of these are coinage metals ?

- A. Au
- B. Ag
- C. Cu
- D. All**

102 In complex compounds the oxidation number is written in

- A. English
- B. Greek
- C. Roman numeral**
- D. Hebrew

103 What is the coordination number of Cu metal in $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$?

- A. 3
- B. 4**
- C. 6
- D. 1

104 When the central atom of coordination compound is sp^3d^2 hybridization the expected geometry will be

- A. Tetrahedral
- B. Square planar
- C. Trigonal bipyramidal
- D. Octahedral**

105 Which of the following properties is not related to transition metals _____?

- A. Complex formation
- B. Color
- C. Fixed valency**
- D. d-orbital

106 How many d-block elements are present in the periodic table?

- A. 40
- B. 23
- C. 37
- D. 30**

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Transition elements



107 Why transition metals have strong metallic bonding?

- A. Because of high melting point
- B. Because d-electrons of outer shell take part in bonding
- C. Because s-electrons of outer shell take part in bonding

D. Both s and d

108 Any process of chemical decay of metals due to the action of the surrounding medium is called

- A. Activation
- B. Enamelling

C. Corrosion

- D. Coating

109 $K_2(Cu(CN)_4)$ which one is correct

- A. Potassium tetra cyano cuperate
- B. Coordination number is 2
- C. The ligand is positively charged

D. Central atom is present in the avionic sphere

110 The correct electronic configuration of Cr is

- A. $[Ar]4s^23d^4$
- B. $[Ar] 4s^23d^4$
- C. $[Ar]4s^3d^5$

D. $[Ar]4s^13d^5$

111 Which one of the following is an example of transition element?

- A. Na
- B. Co**
- C. Ba
- D. Ra

112 Compounds attracted by applied strong magnetic field are called

- A. Diamagnetic
- B. Paramagnetic**
- C. Good conductor
- D. Ferromagnetic

113 Non-stoichiometric compounds of transition elements are called

- A. Hydrates
- B. Hydrides

C. Interstitial compounds

- D. Binary compounds

114 The species which donate two electron pairs in a coordination compound is called

- A. Ligand
- B. Monodentate ligand
- C. Polydentate ligand

D. Bidentate ligand

115 Which of the following element can form interstitial alloy with transition elements?

- A. Zn
- B. Mg
- C. H**
- D. All of these

116 When light is exposed to transition element then electrons jump from lower orbital's to higher orbitals in

- A. Orbitals of f-subshell
- B. Orbital's of d-sub shell
- C. Orbitals of p-subshell

D. Both A & B

117 1st series of transition elements start from?

- A. Sc**
- B. Y
- C. La
- D. Cd

118 Which is sold as fertilizer

- A. $CaSiO_3$
- B. Na_2SiO_3
- C. $Ca_3(PO_4)_2$**
- D. $MnSiO_3$

119 Sc is mostly exist in which of the following oxidation state?

- A. 2
- B. 1
- C. 3**
- D. 0

120 Those elements in which d or f orbitals are in the process of completion are called

- A. Transition elements**
- B. Typical transition elements
- C. Outer transition elements

Transition elements



D. Inner transition elements

121 Which of the following can form a chelate

- A. Ammine
- B. Oxalate**
- C. Carbonyl
- D. Cyano

122 Why Cr shows $3d^5 4s^1$ configuration instead of $3d^4 4s^2$?

- A. Because it is transition element
- B. Because it shows different oxidation states
- C. Because of extra stability of half filled d^5 system**
- D. Because it is typical transition element

123 When we dissolve a compound of transition element in a solution of salt then it will form

- A. Simple ions
- B. Strong anions
- C. Double salts
- D. Complex ions**

124 Lanthanides and actinides resemble in?

- A. Ionization state
- B. Oxidation state
- C. Electronic configuration
- D. Formation of complexes**

125 Which element has completely filled d subshell in both atomic and ionic form?

- A. Cr
- B. Fe
- C. V
- D. Zn**

126 Which of the following is typical transition metal?

- A. Sc
- B. Y
- C. Cd
- D. Co**

127 In the production of wrought iron Mg, Si and P are removed in the form of

- A. Oxides
- B. Silicates
- C. Slag**
- D. Carbonates

128 What is the coordination number of Pt in $[\text{PtCl}(\text{NO}_2)(\text{NH}_3)_4]$

- A. 2
- B. 4
- C. 6**
- D. 7

129 An element becomes paramagnetic if it has _____?

- A. Electric field
- B. Paired valence electrons
- C. Magnetic moment**
- D. None of these

130 Which of the following properties is not related to transition metals _____?

- A. Complex formation
- B. Color
- C. Fixed valency**
- D. d-orbital

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1 The presence of double bond in a compound shows that the compound has _____?

- A. Saturation
- B. All single bonds
- C. **Unsaturation**
- D. Substitution

2 Cyclic compounds consist of except?

- A. Alicyclic
- B. Aromatic
- C. **Acyclic compounds**
- D. Carbocyclic compounds

3 How many hydrogen atoms are attached to tertiary carbon in tertiary butyl alcohol?

- A. 3
- B. 2
- C. 1
- D. **0**

4 propene exhibit

- A. Cis-isomerism
- B. Trans-isomerism
- C. geometric isomerism
- D. **none**

5 Compounds having C and H atoms and their derivatives are called as _____?

- A. Inorganic compounds
- B. **Organic compounds**
- C. Biochemical compounds
- D. Carbohydrates

6 Which of the following conditions must be possessed by a compound to have geometrical isomerism?

- A. Double bond
- B. **Different groups attach to same carbon of double bond and a double bond**
- C. Terminal double bond
- D. Same groups attach to carbon atom of double bond

7 Which of the following compounds can show metamerism?

- A. Aldehydes

B. Carboxylic acids

C. Alcohols

D. **Ketones**

8 Which of the following is correct about octane number?

- A. Higher the octane number, higher will be knocking
- B. Higher the octane number, efficiency of fuel will be lower
- C. **Higher the octane number, lower the knocking**
- D. Lower the octane number, lower the knocking

9 Alicyclic compounds are similar in properties to _____?

- A. Heterocyclic compounds
- B. **Aliphatic compounds**
- C. Acyclic compounds
- D. Aromatic compounds

10 which of the following is the heterocyclic compound

- A. **thiophene**
- B. phenol
- C. aniline
- D. touline

11 which of the following is the heterocyclic compound

- A. **thiophene**
- B. phenol
- C. aniline
- D. touline

12 According to vital force theory organic compounds were only produce in _____?

- A. Animals
- B. Plants
- C. Bacteria
- D. **All of these**

13 A structural formula shows _____?

- A. **Arrangement of atoms in the compound**
- B. Arrangement of electrons in the compound
- C. Arrangement of Orbitals that involved in bonding
- D. Lewis structure of compounds

14 which of the following has neither secondary nor tertiary hydrogen

- A. isobutane
- B. pentane
- C. **neo-pentane**
- D. isopentane

15 The separation of components of liquid on the basis of their boiling points is called as?

- A. Destructive distillation
- B. **Fractional distillation**

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- C. Vacuum distillation
 D. Partial distillation

16 Gasoline produced by the Fractional distillation is _____?

- A. 80%
 B. 5%
 C. 65%
 D. 20%

17 Large hydrocarbons are converted into smaller hydrocarbons by a process called as?

- A. Reforming
 B. Distillation
 C. Cracking
 D. Decomposition

18 Which of the following is not a mixture of hydrocarbons

- A. candle wax
 B. kerosine oil
 C. paraffin oil
 D. vegetable ghee

19 How many isomers of C_4H_{10} are possible?

- A. 4
 B. 3
 C. 2
 D. 1

20 Fuels with higher octane number can be produce by _____?

- A. Cracking
 B. Reforming
 C. Decomposition
 D. Isomerisation

21 The phenomenon in which compounds have same molecular formula but different structural formula is called as _____?

- A. Reforming
 B. Isomerism
 C. Polymorphism
 D. Hybridization

22 An atom or group of atom that gives specific properties to the Compound is called as _____?

- A. Functional groups
 B. Homologous series
 C. Alkane
 D. Atoms

23 Which of the following compound is an amide?

- A. NH_4CNO
 B. NH_2COCH_3
 C. NH_2CONH_2
 D. NH_2COONH_2

24 How much amount of methane does Natural gas contains?

- A. 0.8
 B. 0.85
 C. 0.7
 D. 0.98

25 A double bond consist of

- A. one sigma one pie
 B. 2 sigma
 C. 2 pie
 D. half pie half sigma

26 Organic compounds are _____?

- A. Inorganic
 B. Polar
 C. Ionic
 D. Non-Polar

27 Which one of the following is not a organic compound?

- A. Urea
 B. Methane
 C. Carbon dioxide
 D. Coal

28 Organic compounds are

- A. Ionic
 B. Non ionic
 C. Non covalent
 D. Covalent

29 Fossil fuels are produced due to _____?

- A. Fast decomposition of organic matter
 B. Decomposition of plants
 C. Decomposition of animals
 D. Biochemical decomposition of dead organic matter

30 Which of the following compound is a Alcohol?

- A. CH_3-O-CH_3
 B. CH_3-OH
 C. CH_3COOH
 D. CH_3COCH_3

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

31 Which of the following shows isomerism?

- A. Methane
- B. Ethane
- C. Propane
- D. Butane**

32 Organic compounds are

- A. Volatile**
- B. Non-volatile
- C. fissible
- D. None

33 Isopentane is an example of _____?

- A. Aromatic compounds
- B. Branched chain compound**
- C. Alicyclic compounds
- D. None of these

34 In a homologous series, adjacent members differ by a _____ unit?

- A. CH_3
- B. CH_2**
- C. CH
- D. CH_4

35 Which of the following Shows tautomerism?

- A. Amino acids
- B. Ketones
- C. Carboxylic acids
- D. All of these**

36 Which of the following process is used to improve the quality of Gasoline?

- A. Steam cracking
- B. Reforming**
- C. Catalytic cracking
- D. Distillation

37 Vital force theory proposed by

- A. Wohler
- B. Berzelius**
- C. lanthanides and actinides resemble in?
- D. Lyll

38 The compounds which belongs to same functional group forms a _____?

- A. Class
- B. Group
- C. Homologous series**
- D. None of these

39 Conversion of straight chain hydrocarbons into branched chain is called as _____?

- A. Reforming**
- B. Cracking
- C. Isomers
- D. Decomposition

40 Octane number of n-heptane is _____?

- A. 0**
- B. 100
- C. 40
- D. 98

41 The geometrical isomers in which similar groups on double bond carbon atoms are present on opposite sides are called as _____?

- A. Trans isomers**
- B. Alkanes
- C. Cis isomer
- D. Positional isomers

42 In organic chemistry, we deal with

- A. carbon
- B. Hydrogen
- C. Hydrocarbons**
- D. Potassium

43 Acyclic hydrocarbons are also called as _____?

- A. Closed chain hydrocarbons
- B. Open chain hydrocarbons**
- C. Ring compounds
- D. Alicyclic compounds

44 Which one of the following is a Cyano group?

- A. -SH
- B. -COOH
- C. -CN**
- D. -COOR

45 Tetraethyl lead added to fuel to _____?

- A. Decrease boiling point

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

- B. Prevent heating
 C. Prevent freezing of fuel
D. Prevent knocking

46 number of isomers of C_4H_{10} is:

- A. 2**
 B. 4
 C. 6
 D. 5

47 The compounds in which similar groups are present on the same side of double bond are called as _____?

- A. Trans isomers
 B. Positional isomers
C. Cis isomer
 D. None of these

48 Who proved that no Vital Force theory is involved in synthesis of organic compounds?

- A. Lewis
B. Wohler
 C. Greek Philosophers
 D. Berzilius

49 Which of the following has anti knocking properties?

- A. Tetramethyl lead
 B. Tetraethyl lead
 C. Iso-octane
D. All of these

50 Tautomerism involves the transfer of _____?

- A. Electron
 B. Carbon atom
 C. Functional group
D. H-atom

51 urea belongs to which class of compound

- A. imides
B. amides
 C. amines
 D. carboxylic acid

52 Isopentane is an example of _____?

- A. Aromatic compounds
B. Branched chain compound
 C. Alicyclic compounds
 D. None of these

53 Which type of bonds are broken during cracking?

- A. C-C**
 B. C-H
 C. Both C-C and C-H
 D. C-O

54 What is the formula of ammonium cyanate?

- A. CH_3CONCH_3
 B. NH_2CONH_2
C. NH_4CNO
 D. NH_4CHO

55 Carbon is

- A. trivalent
B. Tetravalent
 C. Monovalent
 D. Pentavalent

56 Compounds having atoms of more than one kind are called as?

- A. Homocyclic compounds
 B. Alicyclic Compounds
C. Heterocyclic compounds
 D. None of these

57 Fossil fuels are produced due to _____?

- A. Fast decomposition of organic matter
 B. Decomposition of plants
 C. Decomposition of animals
D. Biochemical decomposition of dead organic matter

58 Which of the following is not a fraction of refined oil?

- A. Naphtha
 B. Kerosene
 C. Petroleum ether
D. Dioxal

59 Liquid hydrocarbons are converted into gaseous hydrocarbon by

- A. cracking**
 B. hydrolysis
 C. oxidation
 D. distillation

60 Isopentane is an example of _____?

- A. Aromatic compounds
B. Branched chain compound

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

- C. Alicyclic compounds
 D. None of these

61 If a double bond is present between two carbons then this class of compounds is called as _____?

- A. Alkanes
 B. Alkynes
 C. Carbonyl
D. Alkenes

62 1-Chloropropane and 2-Chloropropane are _____?

- A. Position isomers**
 B. Chain Isomers
 C. Functional Group isomers
 D. Metamers

63 Which type of bonds are break during cracking?

- A. C-C**
 B. C-H
 C. Both C-C and C-H
 D. C-O

64 How many organic compounds are known _____?

- A. 850000
B. Over 6 million
 C. 6 million
 D. 5 million

65 Geometrical isomerism arises due to _____?

- A. Rotation around a double bond
 B. Restriction of rotation around a single bond
C. Restriction of rotation around a double bond
 D. Due to double bond

66 The isomerism in which compounds have different number of carbon atoms on both sides of the functional group is called as?

- A. Tautomerism
B. Metamerism
 C. Geometrical Isomerism
 D. Position isomerism

67 Homocyclic compounds are also called as _____?

- A. Heterocyclic compounds

- B. Alicyclic Compounds
 C. Aliphatic compounds
D. Carbocyclic compounds

68 Which one of the following is called as marsh gas?

- A. Methane**
 B. Ethane
 C. Propane
 D. Butane

69 Which catalyst are used in catalytic cracking?

- A. Silica, lime
B. Silica, alumina
 C. Silica, Soda ash
 D. Alumina, Pt

70 80% of the coal is used in _____?

- A. lime kiln**
 B. Domestic purposes
 C. Fuel
 D. Motor bikes

71 Which of the following isomerism is shown by alkynes?

- A. Positional isomerism**
 B. Geometrical isomerism
 C. Cis-trans isomerism
 D. Functional group isomerism

72 which of the following does not have sp^2 hybridized orbital

- A. acetone
B. acetonitrile
 C. acetic acid
 D. acetamide

73 Which type of bonds are break during cracking?

- A. C-C**
 B. C-H
 C. Both C-C and C-H
 D. C-O

74 Which of the following is correct about octane number?

- A. Higher the octane number, higher will be knocking
 B. Higher the octane number, efficiency of fuel will be lower
C. Higher the octane number, lower the knocking
 D. Lower the octane number, lower the knocking

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

75 Which of the following process is used to improve the quality of Gasoline?

- A. Steam cracking
- B. Reforming**
- C. Catalytic cracking
- D. Distillation

76 Organic compounds obtained from

- A. living things**
- B. Non living
- C. fossils
- D. sea's water

77 How many isomers of C_4H_{10} are possible?

- A. 4
- B. 3
- C. 2**
- D. 1

78 Which of the following is called as refined form of mineral oil?

- A. Coal tar
- B. Petroleum**
- C. Crude oil
- D. Kerosine oil

79 1-Chloropropane and 2-Chloropropane are _____?

- A. Position isomers**
- B. Chain Isomers
- C. Functional Group isomers
- D. Metamers

80 Organic compounds are soluble in

- A. polar solvents
- B. water
- C. Ammonium cyanate
- D. Non-polar solvents**

81 The organic compounds having all C-C single bonds are called as _____?

- A. Alkanes**
- B. Alkenes
- C. Alkynes
- D. All of these

82 Which of the following is not aromatic?

- A. Anthracene
- B. Naphthalene
- C. Phenol**

D. None of these

83 Formyl group belongs to which class of compounds ?

- A. Aldehydes
- B. Ketones
- C. Alkanals
- D. Both a and c**

84 Which is not a heterocyclic compound?

- A. Furan
- B. Pyrrole
- C. Pyridine
- D. Ethane**

85 Which of the following is not aromatic?

- A. Anthracene
- B. Naphthalene
- C. Phenol
- D. None of these**

86 Which of the following conditions must be possessed by a compound to have geometrical isomerism?

- A. Double bond
- B. Different groups attach to same carbon of double bond and a double bond**
- C. Terminal double bond
- D. Same groups attach to carbon atom of double bond

87 How many hydrogen atoms are attached to tertiary carbon in tertiary butyl alcohol?

- A. 3
- B. 2
- C. 1
- D. 0**

88 Organic compounds obtained from

- A. living things**
- B. Non living
- C. fossils
- D. sea's water

89 Gasoline produced by the Fractional distillation is _____?

- A. 80%
- B. 5%**

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

- C. 65%
D. 20%
- 90 Fuels with higher octane number can be produce by _____?
 A. Cracking
B. Reforming
 C. Decomposition
 D. Isomerisation
- 91 The phenomenon in which compounds have same molecular formula but different structural formula is called as _____?
 A. Reforming
B. Isomerism
 C. Polymorphism
 D. Hybridization
- 92 Alicyclic compounds are similar in properties to _____?
 A. Heterocyclic compounds
B. Aliphatic compounds
 C. Acyclic compounds
 D. Aromatic compounds
- 93 Which of the following isomerism is shown by alkynes?
A. Positional isomerism
 B. Geometrical isomerism
 C. Cis-trans isomerism
 D. Functional group isomerism
- 94 The phenomenon in which compounds have same molecular formula but different structural formula is called as _____?
 A. Reforming
B. Isomerism
 C. Polymorphism
 D. Hybridization
- 95 Alicyclic compounds are similar in properties to _____?
 A. Heterocyclic compounds
B. Aliphatic compounds
 C. Acyclic compounds
 D. Aromatic compounds
- 96 Which of the following isomerism is shown by alkynes?
A. Positional isomerism
 B. Geometrical isomerism
 C. Cis-trans isomerism
 D. Functional group isomerism
- 97 Organic compounds are soluble in
 A. polar solvents
 B. water
 C. Ammonium cyanate
D. Non-polar solvents
- 98 Fossil fuels are produced due to _____?
 A. Fast decomposition of organic matter
 B. Decomposition of plants
 C. Decomposition of animals
D. Biochemical decomposition of dead organic matter
- 99 Friedrich prepared UREA from
 A. Amino Acids
 B. Ammonium carbonate
C. Ammonium cyanate
 D. Xanthin
- 100 The organic compounds having all C-C single bonds are called as _____?
A. Alkanes
 B. Alkenes
 C. Alkynes
 D. All of these
- 101 Which of the following compound is a Alcohol?
 A. $\text{CH}_3\text{-O-CH}_3$
B. $\text{CH}_3\text{-OH}$
 C. CH_3COOH
 D. CH_3COCH_3
- 102 Which of the following process is used to improve the quality of Gasoline?
 A. Steam cracking
B. Reforming
 C. Catalytic cracking
 D. Distillation

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

103 Which of the following is correct about octane number?

- A. Higher the octane number, higher will be knocking
- B. Higher the octane number, efficiency of fuel will be lower
- C. Higher the octane number, lower the knocking**
- D. Lower the octane number, lower the knocking

104 Fossil fuels are produced due to _____?

- A. Fast decomposition of organic matter
- B. Decomposition of plants
- C. Decomposition of animals
- D. Biochemical decomposition of dead organic matter**

105 Which catalyst are used in catalytic cracking?

- A. Silica, lime
- B. Silica, alumina**
- C. Silica, Soda ash
- D. Alumina, Pt

106 The isomerism in which compounds have different number of carbon atoms on both sides of the functional group is called as?

- A. Tautomerism
- B. Metamerism**
- C. Geometrical Isomerism
- D. Position isomerism

107 Which type of bonds are break during cracking?

- A. C-C**
- B. C-H
- C. Both C-C and C-H
- D. C-O

108 What are the products of destructive distillation of coal?

- A. Coal tar
- B. Coke
- C. Coal gas
- D. All of above**

109 How many chain isomers of Pentane is possible?

- A. Two
- B. Four
- C. Three**
- D. Five

110 The self Linkage ability of Carbon is called as _____?

- A. Polymerization
- B. Substitution
- C. Sequential Carbonation
- D. Catenation**

111 Who rejected vital force theory

- A. Wohler**
- B. Berzelius
- C. Wallis
- D. Lyll

112 Wholar prepare urea from _____?

- A. Ammonium cyanate**
- B. Ammonium acetate
- C. Ammonium urease
- D. Ammonium Carbonate

113 Which of the following isomerism is present in $\text{CH}_3\text{CH}_2\text{OH}$ and CH_3OCH_3 ?

- A. Metamerism
- B. Chain isomerism
- C. Tautomerism
- D. Functional group isomerism**

114 Wholar first time prepare urea in laboratory in _____?

- A. 1900
- B. 1829
- C. 1850
- D. 1828**

115 Fractions of Crude petroleum can be obtained by using _____?

- A. Destructive distillation
- B. Fractional distillation**
- C. Vacuum distillation
- D. Distillation

FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

116 Which type of organic compounds are present in natural gas?

- A. High molecular mass
- B. Low molecular mass
- C. Low boiling point
- D. Both b and c**

117 Coal tar contains many organic compounds that can be separated by _____?

- A. Destructive distillation
- B. Fractional distillation**
- C. Vacuum distillation
- D. Partial distillation

118 What is the octane number of Iso-octane?

- A. 40
- B. 100**
- C. 0
- D. 2

119 The presence of double bond in a compound shows that the compound has _____?

- A. Saturation
- B. All single bonds
- C. Unsaturation**
- D. Substitution

120 Cyclic compounds consist of except?

- A. Alicyclic
- B. Aromatic
- C. Acyclic compounds**
- D. Carbocyclic compounds

121 How many hydrogen atoms are attached to tertiary carbon in tertiary butyl alcohol?

- A. 3
- B. 2
- C. 1
- D. 0**

122 Compounds having C and H atoms and their derivatives are called as _____?

- A. Inorganic compounds
- B. Organic compounds**
- C. Biochemical compounds
- D. Carbohydrates

123 Which of the following compounds can show metamerism?

- A. Aldehydes
- B. Carboxylic acids
- C. Alcohols
- D. Ketones**

124 Which of the following is correct about octane number?

- A. Higher the octane number, higher will be knocking
- B. Higher the octane number, efficiency of fuel will be lower
- C. Higher the octane number, lower the knocking**
- D. Lower the octane number, lower the knocking

HYDROCARBONS

1 What is the hybridization state of carbon in benzene?

- A. sp^2
- B. sp^3
- C. sp
- D. All of these

2 Ortho directing groups _____ on benzene ring?

- A. Increases electron density
- B. Decrease electron density on benzene
- C. Make benzene less reactive
- D. None of these

3 What is the name of this compound?

- A. Ethyl chloride
- B. Ethene chlorine
- C. Chloro ethane
- D. Vinyl chloride

4 Which of the following reactions are not given by benzene?

- A. Elimination
- B. Addition
- C. Substitution
- D. Dehydration

5 The reactivity of alkenes is due to the presence of?

- A. Sigma bond
- B. Two Pi bond
- C. One Pi bond
- D. Due to electrophilic nature

6 1,4-dimethyl benzene is called as _____?

- A. Ortho xylene
- B. Para-xylene
- C. Para-methyl toluene
- D. Meta-methyl toluene

7 The simplest hydrocarbon to have structural isomer is:

- A. Butane
- B. Butanone
- C. Butene
- D. Butyne

8 Which of the following product formed when ethyl chloride react with alcoholic KOH?

- A. C_2H_4
- B. C_2H_5OH
- C. C_2H_4ClOH
- D. C_2H_6

9 The simplest member of organic compounds is?

- A. Methanol
- B. Methane
- C. Formaldehyde
- D. Formic acid

10 Ethyne has which hybridization?

- A. sp^3
- B. sp^2
- C. sp
- D. sp^2d

11 Which of the following suffix is used for the common naming of alkene?

- A. -ene
- B. -ylene
- C. -yne
- D. -ylene

12 The addition of HBr to an unsymmetrical alkenes follows?

- A. Direct addition
- B. Markovnikov's addition
- C. Anti Markovnikov's addition
- D. Dehydration

13 First member of alkynes is called as _____?

- A. Ethylene
- B. Acetylene
- C. Acetone
- D. Ethene

14 Which of the following give free radical reaction when react with alkanes?

- A. Nitric acid
- B. Oxygen
- C. Halogen
- D. All of these

15 The group formed by removal of one H atom from the benzene ring is called as _____?

- A. Alkyl group
- B. Benzyl group
- C. Phenyl group

D. Ethyl group

16 Free radical reactions takes place in the presence of _____?

- A. Heat
- B. Sun light**
- C. Catalyst
- D. Oxygen

17 Which one of the following is used for the artificial ripening of fruits?

- A. Ethene**
- B. Propene
- C. Ethane
- D. Ethyne

18 What is the value of C-C bond length in benzene?

- A. 154 pm
- B. 120 pm
- C. 134 pm
- D. 139 pm**

19 Which of the following suffix is used for the common naming of alkene?

- A. -ene**
- B. -ylene
- C. -yne

D. yna

20 Kekule's formula shows benzene _____?

- A. Highly saturated
- B. Highly unsaturated**
- C. Give Substitution reaction
- D. Give elimination reaction

21 Which one of the following is most reactive ?

- A. Benzene**
- B. Ethane
- C. Ethene
- D. Ethyne

22 How many resonance structures of benzene are possible?

- A. 2**
- B. 3
- C. 6
- D. 4

23 Ethane is obtained by electrolyzing _____

- A. Potassium formate
- B. Potassium succinate**
- C. Potassium acetate
- D. Potassium fumarate

24 Which of the following is most reactive of all?

- A. Alkanes
- B. Alkenes
- C. Alkynes**
- D. Benzene

25 Alkanes are called as _____?

- A. Olefines
- B. Paraffins**
- C. Reactive
- D. All of these

26 Cyclic bromonium ion is formed when ethene reacts with _____?

- A. HBr**
- B. HCl
- C. Br₂
- D. None of these

27 Which of the following is Bayer's reagent ?

- A. Br₂/H₂O
- B. Dilute alkaline KMnO₄**
- C. ZnCl₂/HCl
- D. Br₂/CCl₄

28 The unhybridized p orbitals of benzene are present in the form of _____?

- A. Between the C-C bonds of benzene
- B. Above and below the carbon bonds
- C. In the form of cloud above and below the benzene ring**
- D. None of these

29 Which of the following gives Markovnikov's product with Propene?

- A. HBr
- B. H₂SO₄/H₂O
- C. HBr
- D. All of these**

30 Aldehydes are converted into _____ when undergoes Wolff Kishner reduction?

- A. Alkenes
- B. Alkanes
- C. Alkynes

D. Alcohols

31 Benzene molecule contains:

- A. Three triple bonds
- B. Two double bonds
- C. Three double bonds**
- D. No multiband

32 Which of the following are product of following reaction in the presence of sunlight? $\text{CH}_4 + \text{Cl}_2 \rightarrow ?$

- A. CHCl_3
- B. CCl_4
- C. $\text{CH}_2\text{Cl}_2, \text{CH}_3\text{Cl}$
- D. All of these**

33 Alkanes mostly give _____?

- A. Addition reactions
- B. Elimination reactions
- C. Reduction reactions
- D. Substitution reactions**

34 Calcium carbide on reaction with water gives?

- A. Methane
- B. Ethane
- C. propane
- D. Acetylene**

35 How many unhybridized orbitals are there in ethyne molecule?

- A. 1
- B. 2**
- C. 3
- D. 4

36 What is the color of silver acetylide, $\text{Ag}_2\text{C}_2\text{Ag}$?

- A. Red
- B. White**
- C. Brown
- D. Pinkish

37 Which of the following compound is formed as a result of polymerization of acetylene?

- A. Benzene**
- B. 1,3,5-cyclohexatriene
- C. Hexene
- D. Butane

38 Benzene is extra stable because of _____?

- A. Cyclic structure
- B. Three alternating double and single bonds
- C. Delocalization of pi-electrons**
- D. All of these

39 What are Kekule structures?

- A. The two isomers of benzene
- B. The isomers of arenes
- C. The two-resonance structure of benzene**
- D. The two-resonance structure of phenols

40 Which of the following Halogen react fast with alkanes in substitution reactions?

- A. Cl_2
- B. F_2**
- C. I_2
- D. Br_2

41 Which of the following product is obtained from the Chlorination of acetylene?

- A. 1,2,3,4-tetrachloroethylene
- B. 1,1,2,2-tetrachloroethylene
- C. 1,1,2,2-Tetrachloroethane**
- D. 1,2,3,4-Tetrachloroethylene

42 What is the Hybridization of carbon in ethene?

- A. sp^2**
- B. sp^3
- C. sp
- D. None of these

43 The geometry of butane is:

- A. octahedral
- B. Tetrahedral**
- C. Trigonal planar
- D. Square planar

44 Free radical reactions takes place in the presence of _____?

- A. Heat
- B. Sun light**
- C. Catalyst
- D. Oxygen

45 The hydrocarbon in which all the 4 valencies of carbon are fully occupied is called as _____

- A. Alkene
- B. Alkyne
- C. Alkane**
- D. Cycloalkane

46 In sp^2 hybridization the orbital orientation is:

- A. 109.5°
- B. 180°
- C. 90°
- D. 120°**

47 Alkanes mostly give _____?

- A. Addition reactions
- B. Elimination reactions
- C. Reduction reactions
- D. Substitution reaction**

48 Which of the following reaction does acetylene give due to its acidic hydrogens?

- A. Ozonolysis
- B. Hydroxylation
- C. Acetylide formation**
- D. Kolbe's electrolysis

49 Which one of the following benzene molecule have?

- A. Two double bonds
- B. Delocalized pi-electron charge**
- C. Three double bonds
- D. One sigma bond

50 Which of the following give free radical reaction when react with alkanes?

- A. Nitric acid
- B. Oxygen
- C. Halogen**
- D. All of these

51 Alkenes have which type of hybridization?

- A. sp^2**
- B. sp^3
- C. sp^2d
- D. sp

52 Free radical reactions takes place in the presence of _____?

- A. Heat
- B. Sun light**

- C. Catalyst
- D. Oxygen

53 Which of the following method is used to prepare Ethylene glycol from ethene?

- A. Dehydration
- B. Hydroxylation**
- C. Hydration
- D. Luca's test

54 Organic compounds in which tetravalency of carbon atom is satisfied are called as _____?

- A. Saturated**
- B. Unsaturated
- C. Alkenes
- D. Alkynes

55 Which of the following is not a derivative of benzene

- A. Pyrrole
- B. Furan
- C. Thiophene
- D. All**

56 Which of the following is an example of free radical?

- A. Br^+
- B. Br^-**
- C. Br
- D. Cl_2

57 Which of the following group is ortho-para directing group _____?

- A. $-COOH$
- B. $-COR$
- C. $-CN$
- D. $-OH$**

58 What is the IUPAC name of $CH_3(CH_3)CHCH_3$?

- A. 1-Methylpropane
- B. Isobutane
- C. 2-Methylpropane**
- D. Isopropyl methane

59 Ethyne molecule is formed when:

- A. When two sp hybridized orbitals combine**
- B. When two sp^2 hybridized orbitals combine
- C. When two sp^3 hybridized orbitals combine

D. When two sp^2d hybridized orbitals combine

60 Which of the following catalyst is used in Friedel craft reaction?

- A. $ZnCl_2$
- B. $KMnO_4$
- C. $AlCl_3$**
- D. V_2O_5

61 What is the formula of chloroform?

- A. CH_3Cl
- B. CH_2Cl_2
- C. $CHCl_3$**
- D. CH_2Cl

62 The conversion of n-hexane to benzene by heating is called:

- A. Deformation
- B. Rearrangement
- C. Reformation
- D. Aromatization**

63 The reaction in which one of the group of a compound is replaced by another group of atoms is called as _____?

- A. Substitution**
- B. Elimination
- C. Addition
- D. Condensation

64 How meta directing groups affect the Electrophilic substitution of benzene ring?

- A. Increase electron density at ortho, para position
- B. Decrease electron density at ortho and para positions
- C. Make benzene less reactive
- D. Both b and c**

65 When acetylene react with ammoniacal solution cuprous chloride which color of acetylide is formed ?

- A. White
- B. Red**
- C. Brown
- D. Pink

66 Alkanes are called as _____?

A. Olefines

B. Paraffins

C. Reactive

D. All of these

67 Which of the following act as electrophile during nitration of benzene?

- A. NO^+
- B. NO_2^+**
- C. NO_3^+
- D. HNO_2^+

68 Which of the following gives Markovnikov's product with Propene?

- A. HBr
- B. H_2SO_4/H_2O
- C. HBr
- D. All of these**

69 Polymerization of ethene produces which of the following polymer?

- A. Polyvinyl
- B. Polyethyl
- C. Polyethylene**
- D. Polyethoxy

70 If two substituents are present at 1,4 positions then the isomer is called as _____?

- A. Ortho
- B. Meta
- C. Para**
- D. None of these

71 The two pi bonds in ethyne molecule are:

- A. Parallel to the sigma bond
- B. At 19.5° to the sigma bond
- C. At 45° to the sigma bond
- D. Perpendicular to the sigma bond**

72 The reaction in which benzene is reacted with alkyl or acyl halide in the presence of $AlCl_3$ is called as _____?

- A. Aldol condensation
- B. Wolf kishner reaction
- C. Wittig reaction
- D. Friedel and craft reaction**

73 Which one of the following is correct value of resonance energy of benzene?

- A. 155.5kJ/mol
- B. 150.5kJ/mol**
- C. 170 kJ/mol
- D. 140.5kJ/mol

74 Which of the following has one acidic hydrogen in it?

- A. Acetylene
- B. 2-propene
- C. 2-pentyne
- D. 1-pentyne**

75 How many molecules of H_2 adds in acetylene to form ethane?

- A. 1
- B. 3
- C. 4
- D. 2**

76 How carboxylic acid group attached to benzene ring affect its reactivity?

- A. Make it reactive
- B. Makes ortho position of benzene more reactive than others
- C. Makes meta position of benzene more reactive than others**
- D. Makes para position of benzene more reactive than others

77 Pentene has how many isomers?

- A. 2
- B. 1
- C. 5
- D. 3**

78 First member of alkynes is called as _____?

- A. Ethylene
- B. Acetylene**
- C. Acetone
- D. Ethene

79 In which of the following reaction steps free radical is formed?

- A. Initiation, termination
- B. Termination, propagation
- C. Only initiation
- D. Initiation, propagation**

80 Which one is the major product when ethene react with Br_2 in H_2O ?

- A. Dibromoethane
- B. Bromoethane
- C. Hydroxy Bromoethane**
- D. Hydroxy Bromoethane

81 In which of the following benzene is isolated?

- A. Naphthalene
- B. Diphenyl ethane**
- C. Phenanthrene
- D. Anthracene

82 First member of alkynes is called as _____?

- A. Ethylene
- B. Acetylene**
- C. Acetone
- D. Ethene

83 In which of the following reaction steps free radical is formed?

- A. Initiation, termination
- B. Termination, propagation
- C. Only initiation
- D. Initiation, propagation**

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- C. Hydroxy Bromoethane**
- D. Hydroxy Bromoethane

85 In which of the following benzene is isolated?

- A. Naphthalene
- B. Diphenyl ethane**
- C. Phenanthrene
- D. Anthracene

86 Addition of HCl to an propene forms _____?

- A. 1-chloropropane
- B. 2-chloropropane**
- C. 2-chloropropane
- D. 3-chloropropane

87 The second bond in ethyne is:

- A. Pi bond between hybridized orbitals
- B. Sigma bond between hybridized orbitals
- C. Pi bond between unhybridized orbitals**
- D. Sigma bond between unhybridized orbitals

88 When are the prefixes ortho, para, and meta used?

- A. In alkynes to identify the position of triple bond
- B. In arenes to identify the position first substitution
- C. In arenes to identify the position second substitution**

D. In all hydrocarbons to identify the position functional group

89 Ethene is prepared from alcohol by _____?

- A. Decomposition
- B. Dehydration**
- C. Dehydroxylation
- D. Dehalogenation

90 When the two substitution are different in arenes, they are put in which of the following order?

- A. Numerically
- B. Alphabetically**
- C. Alphanumerically
- D. None

91 Which of the following reaction is used in the preparation of vegetable ghee from oil?

- A. Hydration
- B. Sulphonation
- C. Hydrogenation**
- D. Dehydrogenation

92 Hydrogenation of alkenes takes place in the presence of _____?

- A. Nickel
- B. Gold
- C. Palladium
- D. Raney Nickel**

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- B. Sulphonation
- C. Hydrogenation**
- D. Dehydrogenation

94 Hydrogenation of alkenes takes place in the presence of _____?

- A. Nickel
- B. Gold
- C. Palladium
- D. Raney Nickel**

95 Which of the following reaction can be used to prepare Symmetrical alkanes?

- A. Reduction reaction
- B. Kolb's reaction**
- C. Clemmensen Reaction
- D. Hydrogenolysis

96 Ethene react with Oxygen in the presence of Silver oxide to produce _____?

- A. Ethylene oxide
- B. Ethylene epoxide
- C. Methylene oxide
- D. Both a and b**

97 Which of the following is true about arenes?

- A. Low melting, and low boiling points**
- B. High melting, and high boiling points
- C. Low melting, and high boiling points
- D. High solubility in polar solvents

98 How many pi bonds are present in ethene?

- A. 3
- B. 2
- C. 1**
- D. 0

99 Hydrocarbons are organic compounds with element _____

- A. Hydrogen
- B. Oxygen
- C. Carbon
- D. Both hydrogen**

100 Which of the following are the products of catalytic oxidation of methane?

- A. CO_2 , H_2O**
- B. CO , H_2O
- C. CO_2 , H_2
- D. CH_3OH

101 Which of the following reactions are not given by benzene?

- A. Elimination
- B. Addition**
- C. Substitution
- D. Dehydration

102 By which reaction benzene is prepared from cyclohexane?

- A. Hydrogenation
- B. Dehydrogenation**
- C. Dehydration
- D. None of these

103 Kekule structure of benzene failed to explain:

- A. Benzene reactivity
- B. That benzene has dual character
- C. That benzene has less heat of formation
- D. All**

104 Which of the following are product of following reaction in the presence of sunlight? $\text{CH}_4 + \text{Cl}_2 \rightarrow ?$

- A. CHCl_3
- B. CCl_4
- C. $\text{CH}_2\text{Cl}_2, \text{CH}_3\text{Cl}$
- D. All of these**

105 Which one of the following is correct structure of benzene?

- A. Tetrahedral
- B. Hexagonal planar**
- C. Hexagonal irregular
- D. Trigonal planar

106 Which one of the following is a strong electrophile on which benzene electrons attack fastly?

- A. FeBr_3
- B. FeCl_4^-
- C. Cl^+**
- D. Cl^-

107 Shape of benzene molecule is:

- A. Hexagonal planar**
- B. Square planar
- C. Trigonal planar
- D. Linear

108 Which of the following suffix is used for the common naming of alkene?

- A. -ene**
- B. -ylene
- C. -yne
- D. -eylene

109 Which of the following oxidizing agents can oxidize benzene?

- A. KMnO_4
- B. $\text{K}_2\text{Cr}_2\text{O}_7$
- C. KHMnO_4
- D. V_2O_5**

110 Which of the following reaction is used to locate the position of double bond in the compound?

- A. Dehydration
- B. Ozonolysis**
- C. Markovnikov's addition
- D. Oxidation with KMnO_4

111 How many products of mono-substituted benzene are possible?

- A. Two
- B. One**
- C. Three
- D. None of these

112 What is the hybridization state of carbon in benzene?

- A. sp^2**
- B. sp^3
- C. sp
- D. All of these

113 Ortho directing groups _____ on benzene ring?

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- B. Decrease electron density on benzene
- C. Make benzene less reactive
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- C. Chloro ethane
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- D. Meta-methyl toluene

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- C. Butene
- D. Butyne

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- B. C_2H_5OH
- C. C_2H_4ClOH
- D. C_2H_6

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- A. Methanol
- B. Methane**
- C. Formaldehyde
- D. Formic acid

121 Ethyne has which hybridization?

- A. sp^3
- B. sp^2
- C. sp**
- D. sp^2d

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- B. -ylene
- C. -yne
- D. -eylene

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- A. Direct addition
- B. Markovnikov's addition**
- C. Anti Markovnikov's addition
- D. Dehydration

124 First member of alkynes is called as _____?

- A. Ethylene
- B. Acetylene**

C. Acetone

D. Ethene

ALKYL HALIDES

1 In S_N2 reaction, rate of reaction is directly proportional to concentration of _____?

- A. Substrate only
- B. Nucleophile
- C. Substrate and nucleophile
- D. All of these**

2 Which one of the following is the correct IUPAC name of 2-Chloro,3-methylpentane?

- A. $CH_3-CH_2-CH(Cl)-CH(CH_3)-CH_3$
- B. $CH_3-CH_2-CH(CH_3)-CH(Cl)-CH_3$**
- C. $CH_3-CH_2-CH(Cl)-CH(Cl)-CH_3$
- D. $CH_3-CH_2-CH(Cl)-CH(CH_3)-CH_3$

3 The group which leaves from the substrate in a nucleophilic substitution reaction is called as ____?

- A. Leaving group**
- B. Electrophile
- C. Substrate
- D. Weak nucleophile

4 In S_N2 reaction, which of the following species is formed?

- A. Transition state**
- B. Intermediate
- C. Carbocation
- D. Carbanion

5 Reduction of alkyl halides in the presence of Zn and mineral acid produces _____?

- A. Alkenes
- B. Alkanes**
- C. Alkynes
- D. Alcohols

6 There is one lone pair present in H_3O^+ , it cannot act as _____?

- A. Electrophile
- B. Lewis acid
- C. Nucleophile**
- D. Strong acid

7 What is the correct order of reactivity of alkyl halides?

- A. $R-Cl > R-Br > R-F > R-I$
- B. $R-I > R-Br > R-Cl > R-F$**
- C. $R-I > R-Cl > R-Br > R-F$
- D. None of these

8 Which of the following reaction is concerted (single step)?

- A. $S_N1, E1$
- B. $S_N2, E1$
- C. $S_N2, E2$**
- D. None of these

9 I^- is an example of _____?

- A. Electrophile
- B. Nucleophile
- C. Leaving group
- D. Both nucleophile and leaving group**

10 Which of the following is an example of good leaving group?

- A. Cl^-**
- B. ^-OH
- C. ^-OR
- D. $^-NH_2$

11 S_N1 reactions have which of the following species formed and consumed in the reaction?

- A. Transition state
- B. Intermediate**
- C. Carbanion
- D. Carbene

12 There is one lone pair present in H_3O^+ , it cannot act as _____?

- A. Electrophile
- B. Lewis acid
- C. Nucleophile**
- D. Strong acid

13 Which of the following is formed during S_N1 reactions?

ALKYL HALIDES

- A. Secondary carbocation
- B. Primary carbocation
- C. Tertiary carbocation**
- D. Methyl carbocation

14 The product in S_N2 reaction is formed with _____?

- A. Inversion in configuration**
- B. Retention in configuration
- C. 50% retention in configuration
- D. 50% inversion in configuration

15 In a reaction having both alkyl halide and base, the base will attack on _____?

- A. Electrophilic carbon
- B. Nucleophilic carbon
- C. beta-hydrogen**
- D. None of these

16 During the nomenclature of Alkyl halides, halogens are named as _____?

- A. Substituents**
- B. Parent name
- C. Ligand
- D. Longest chain

17 In S_N2 reaction, rate of reaction is directly proportional to concentration of _____?

- A. Substrate only
- B. Nucleophile
- C. Substrate and nucleophile
- D. All of these**

18 Which of the following bond has highest bond energy value?

- A. C-I
- B. C-H
- C. C-Cl
- D. C-F**

19 I^- is an example of _____?

- A. Electrophile
- B. Nucleophile
- C. Leaving group
- D. Both nucleophile and leaving group**

20 In a reaction having both alkyl halide and base, the base will attack on _____?

- A. Electrophilic carbon
- B. Nucleophilic carbon
- C. beta-hydrogen**

D. None of these

21 First step in the S_N1 reaction is _____?

- A. Dehydration
- B. Protonation
- C. Ionization**
- D. Attack of nucleophile and departure of leaving group

22 What is the order of S_N2 reactions?

- A. 1st order
- B. zero order
- C. 2nd order**
- D. 3rd order

23 What is the reason for the reactivity of Grignard reagent?

- A. Presence of Mg atom
- B. Polarity of C-H bond
- C. Polarity of C-Mg bond**
- D. Presence of electrophilic carbon

24 In S_N2 reaction, rate of reaction is directly proportional to concentration of _____?

- A. Substrate only
- B. Nucleophile
- C. Substrate and nucleophile
- D. All of these**

25 Which of the following is true about the kinetics of bimolecular elimination reactions?

- A. 1st order reaction
- B. 2nd order reaction**
- C. Zero order reaction
- D. 3rd order reaction

26 Which of the following is an example of good leaving group?

- A. Cl^-**
- B. ^-OH
- C. ^-OR
- D. $^-NH_2$

27 In a reaction having both alkyl halide and base, the base will attack on _____?

ALKYL HALIDES

- A. Electrophilic carbon
- B. Nucleophilic carbon
- C. beta-hydrogen**
- D. None of these

28 Grignard reagent is produced by the reaction of Alkyl halides with _____?

- A. Ca in anhydrous ether
- B. Mg in dry ether**
- C. Mg in hydrous ether
- D. Ca in dry ether

29 In SN_2 reaction, which of the following specie is formed?

- A. Transition state**
- B. Intermediate
- C. Carbocation
- D. Carbanion

30 In SN_2 reaction, Nucleophile attacks on the electrophilic carbon ?

- A. From the side of leaving group
- B. Opposite to leaving group**
- C. In front of leaving group
- D. Below leaving group

31 If in a solution of alkyl halide in a nonpolar solvent, base is added which of the following reaction takes place?

- A. SN_2
- B. E_1
- C. SN_1
- D. E_2**

32 In IUPAC nomenclature alkyl halides are named as _____?

- A. Alkyl Halogens
- B. HalogenoAlkanes
- C. Haloalkanes**
- D. Alkyl halides

33 When CH_3CH_2MgBr reacts with CO_2 which of the following product is formed?

- A. $CH_3CH_2CH_2CH_2OH$
- B. $CH_3CH_2CH_2OH$

C. CH_3CH_2COOH

D. $CH_3CH_2CH_2Br$

34 What is the value of molecularity and order of SN_1 reactions?

- A. 2,1
- B. 1,1**
- C. 0,1
- D. 0,2

35 During SN_1 mechanism, nucleophile can attack on the halogen carbon?

- A. From opposite side of leaving group
- B. From front of leaving group
- C. From both sides**
- D. None of these

36 The reaction in which a nucleophile replaces another atom present in a compound is called as _____?

- A. Nucleophilic elimination reaction
- B. Nucleophilic addition reaction
- C. Nucleophilic substitution reaction**
- D. All of these

37 During SN_1 mechanism, nucleophile can attack on the halogen carbon?

- A. From opposite side of leaving group
- B. From front of leaving group
- C. From both sides**
- D. None of these

38 SN_2 reactions are _____?

- A. Nucleophilic unimolecular addition reactions
- B. Nucleophilic bimolecular substitution reactions**
- C. Nucleophilic bimolecular addition reactions
- D. Nucleophilic unimolecular substitution reactions

39 Alkyl iodides can not be prepared directly by the halogenation of alkanes because ?

- A. Iodine reacts slowly
- B. Iodine reacts reversibly
- C. HI formed reduces alkyl iodide again to starting material
- D. All of these**

ALKYL HALIDES

40 Alkyl halides generally give which type of elimination reactions?

- A. alpha-elimination
- B. gamma-elimination
- C. beta-elimination**
- D. syn-elimination

41 In which phase S_N2 reactions are favored?

- A. Solid
- B. Liquid
- C. Gas**
- D. All of these

42 Which one of the following is not a secondary alkyl halide?

- A. 2-Chloropropane
- B. 3-Bromobutane
- C. 2,3-dichloropentane
- D. 2-chloro,2-methylpentane**

43 What is the common name of the compound?

- $CH_3-(CH_2)_2-CH_2-Cl$
- A. Chlorobutane**
 - B. Chloropentane
 - C. n-Chloropentane
 - D. n-pentyl chloride
 - E. 1-chloropentane

44 Which alkyl halide give S_N2 reactions?

- A. Secondary
- B. Primary**
- C. Tertiary
- D. All of these

45 What is the common name of the compound?

- $CH_3-(CH_2)_2-CH_2-Cl$
- A. Chlorobutane**
 - B. Chloropentane
 - C. n-Chloropentane
 - D. n-pentyl chloride
 - E. 1-chloropentane

46 S_N1 reactions have which of the following specie formed and consumed in the reaction ?

- A. Transition state

B. Intermediate

- C. Carbanion
- D. Carbene

47 Which of the following is a poor leaving group in nucleophilic substitution reactions?

- A. Cl^-
- B. Br^-
- C. I^-
- D. ^-OH**

48 Which of the following compete with each other?

- A. E_1 , E_2
- B. E_1 , S_2
- C. E_2 , S_1
- D. E_2 , S_2**

49 In secondary alkyl halides how many H atoms are attached to Carbon atom which is attached with halogen?

- A. 2
- B. 1**
- C. 3
- D. 4

50 The specie which is in search of Positive charge is called as _____?

- A. Electrophile
- B. Nucleophilic
- C. Nucleophile**
- D. Cation

51 The rate of S_N1 reaction become doubled if _____?

- A. Concentration of Nucleophile doubled
- B. Concentration of Substrate doubled**
- C. Concentration of Substrate Tripled
- D. Concentration of substrate remain same

52 Which of the following product is formed when Alkyl halide reaction with KOH in the presence of alcohol?

- A. Alkane
- B. Alcohol
- C. Halohydrin

ALKYL HALIDES

D. Alkene

53 SN_1 reactions are favored by which of the following reactions?

- A. Water**
- B. Benzene
- C. Carbon Tetrachloride
- D. Carbon disulphide

54 Which of the following is best method to prepare alkyl halides from alcohols?

- A. Reaction of alcohol with HX
- B. Reaction of alcohol with $SOCl_2$**
- C. Reaction of Alcohol with PCl_3
- D. Reaction of Alcohol with PCl_5

55 In IUPAC nomenclature alkyl halides are named as _____?

- A. Alkyl Halogens
- B. HalogenoAlkanes
- C. Haloalkanes**
- D. Alkyl halides

56 In SN_2 reaction, Nucleophile attacks on the electrophilic carbon ?

- A. From the side of leaving group
- B. Opposite to leaving group**
- C. In front of leaving group
- D. Below leaving group

57 Which one of the following is not a secondary alkyl halide?

- A. 2-Chloropropane
- B. 3-Bromobutane
- C. 2,3,dichloropentane
- D. 2-chloro,2-methylpentane**

58 With which of the following Grignard reagents react to form Alkanes ?

- A. Ammonia
- B. Water
- C. Methanol
- D. All of these**

59 Which one of the following is not a secondary alkyl halide?

- A. 2-Chloropropane
- B. 3-Bromobutane
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61 Alkyl halides generally give which type of elimination reactions?

- A. alpha-elimination
- B. gamma-elimination
- C. beta-elimination**
- D. syn-elimination

62 In which phase SN_2 reactions are favored?

- A. Solid
- B. Liquid
- C. Gas**
- D. All of these

63 In a reaction having both alkyl halide and base, the base will attack on _____?

- A. Electrophilic carbon
- B. Nucleophilic carbon
- C. beta-hydrogen**
- D. None of these

64 What is the correct order of reactivity of alkyl halides ?

- A. $R-Cl > R-Br > R-F > R-I$
- B. $R-I > R-Br > R-Cl > R-F$**
- C. $R-I > R-Cl > R-Br > R-F$
- D. None of these

65 Which one of the following is an electrophile?

- A. Br^+**
- B. CH_4
- C. NH_3
- D. H_2O

ALKYL HALIDES

66 The rate of SN_1 reaction become doubled if _____?

- A. Concentration of Nucleophile doubled
- B. Concentration of Substrate doubled**
- C. Concentration of Substrate Tripled
- D. Concentration of substrate remain same

67 Which of the following is formed during SN_1 reactions?

- A. Secondary carbocation
- B. Primary carbocation
- C. Tertiary carbocation**
- D. Methyl carbocation

68 Which of the following is true about the kinetics of bimolecular elimination reactions?

- A. 1st order reaction
- B. 2nd order reaction**
- C. Zero order reaction
- D. 3rd order reaction

69 Which of the following reactions have first step similar with each other?

- A. E_1, S_2
- B. E_2, S_1
- C. E_2, S_2
- D. E_1, S_1**

70 Any specie which carry a positive charge and can accept electrons is called as _____?

- A. Electrophile**
- B. Anion
- C. Nucleophile
- D. Electrophobic

71 The reaction in which a nucleophile replaces another atom present in a compound is called as _____?

- A. Nucleophilic elimination reaction
- B. Nucleophilic addition reaction
- C. Nucleophilic substitution reaction**
- D. All of these

72 First step in the SN_1 reaction is _____?

- A. Dehydration
- B. Protonation
- C. Ionization**
- D. Attack of nucleophile and departure of leaving group

73 Any specie which carry a positive charge and can accept electrons is called as _____?

- A. Electrophile**
- B. Anion
- C. Nucleophile
- D. Electrophobic

74 The reaction in which a nucleophile replaces another atom present in a compound is called as _____?

- A. Nucleophilic elimination reaction
- B. Nucleophilic addition reaction
- C. Nucleophilic substitution reaction**
- D. All of these

75 First step in the SN_1 reaction is _____?

- A. Dehydration
- B. Protonation
- C. Ionization**
- D. Attack of nucleophile and departure of leaving group

76 In SN_2 reaction, which of the following specie is formed?

- A. Transition state**
- B. Intermediate
- C. Carbocation
- D. Carbanion

77 Which of the following compounds can be prepared by using grignard reagents?

- A. Alkanes
- B. Alcohols
- C. Carboxylic acids
- D. All of these**

78 In Which of the following reaction rate of reaction is not affected by increasing concentration of nucleophile?

- A. SN_2
- B. E_2
- C. SN_1**
- D. None of these

79 Grignard reagent is produced by the reaction of Alkyl halides with _____?

- A. Ca in anhydrous ether
- B. Mg in dry ether**
- C. Mg in hydrous ether
- D. Ca in dry ether

80 SN_2 reactions are _____?

- A. Nucleophilic unimolecular addition reactions
- B. Nucleophilic bimolecular substitution reactions**
- C. Nucleophilic bimolecular addition reactions
- D. Nucleophilic unimolecular substitution reactions

ALKYL HALIDES

81 What is the correct general formula of Grignard reagent?

- A. RMX
- B. R_2MgX
- C. $RMgX_2$
- D. $RMgX$**

82 SN_1 reaction is a _____?

- A. Multistep reaction
- B. Two step reaction**
- C. Concerted reaction
- D. 3 step reaction

83 Which of the following bond has highest bond energy value?

- A. C-I
- B. C-H
- C. C-Cl
- D. C-F**

84 SN_2 reactions are _____?

- A. 2 step reactions
- B. Multistep reactions
- C. Single step reactions**
- D. None of these

85 Which of the following is an example of good leaving group?

- A. Cl^-**
- B. OH^-
- C. OR^-
- D. NH_2^-

86 During SN_1 mechanism, nucleophile can attack on the halogen carbon?

- A. From opposite side of leaving group
- B. From front of leaving group
- C. From both sides**
- D. None of these

87 of Grignard reagent from alkyl halide and Mg metal takes place in _____?

- A. Water
- B. Alcohol
- C. Anhydrous ether**
- D. Carbon tetrachloride

88 In tertiary alkyl halides, carbon atoms is attached to how many carbon atoms?

- A. 2
- B. 3**
- C. 4
- D. 1

89 Which of the following is an example of Nucleophile?

- A. Br^+
- B. CH_3^+**
- C. NH_3**
- D. CH_4

90 The products of SN_1 reactions are formed with _____?

- A. Retention in configuration
- B. Inversion in Configuration
- C. 50% retention and 50% inversion in configuration**
- D. All of these

91 Which of the following alkyl halide is most reactive towards Mg atom?

- A. Alkyl bromide
- B. Alkyl fluoride
- C. Alkyl chloride
- D. Alkyl iodide**

92 What is the value of molecularity and order of SN_1 reactions?

- A. 2,1
- B. 1,1**
- C. 0,1
- D. 0,2

93 Alkyl iodides can not be prepared directly by the halogenation of alkanes because ?

- A. Iodine reacts slowly
- B. Iodine reacts reversibly
- C. HI formed reduces alkyl iodide again to starting material
- D. All of these**

94 SN_1 reactions have which of the following specie formed and consumed in the reaction ?

- A. Transition state

ALKYL HALIDES

B. Intermediate

- C. Carbanion
- D. Carbene

95 The compounds which are formed by the replacement of a hydrogen atom by a halogen is called as ___?

- A. Alcohol

B. Alkyl halide

- C. Carbonyl halide
- D. Ethers

96 Which of the following reaction is used to produce symmetrical alkanes from alkyl halides?

- A. Wittig reaction
- B. Kolbe's electrolysis
- C. Reduction of alkyl halide

D. Wurtz reaction

97 In Which of the following reaction rate of reaction is not affected by increasing concentration of nucleophile?

- A. SN_2
- B. E_2

C. SN_1

- D. None of these

98 Which of the following is slow step in SN_1 reactions?

- A. Ionization
- B. Formation of carbocation
- C. Formation of Double bond

D. Formation of Alkyl halide from Carbocation

99 SN_1 reaction is a _____?

- A. Multistep reaction
- B. Two step reaction
- C. Concerted reaction
- D. 3 step reaction

100 When CH_3CH_2MgBr reacts with CO_2 which of the following product is formed?

- A. $CH_3CH_2CH_2CH_2OH$
- B. $CH_3CH_2CH_2OH$
- C. CH_3CH_2COOH
- D. $CH_3CH_2CH_2Br$

101 The products of SN_1 reactions are formed with _____?

- A. Retention in configuration
- B. Inversion in Configuration
- C. 50% retention and 50% inversion in configuration
- D. All of these

102 I^- is an example of _____?

- A. Electrophile
- B. Nucleophile
- C. Leaving group
- D. Both nucleophile and leaving group

103 Which one of the following is not a alkyl halide?

- A. 2-chloropropane
- B. 1-chlorobutane
- C. 2-butene
- D. 4-chlorohexane

104 Which of the following solvent favor SN_2 reactions?

- A. Water
- B. Ammonia
- C. Carbon tetrachloride
- D. Acetic acid

ALKYL HALIDES

105 Which one of the following is the correct IUPAC name of 2-Chloro,3-methylpentane ?

- A. $\text{CH}_3\text{-CH}_2\text{-CH(Cl)-CH(CH}_3\text{)-CH}_3$
B. $\text{CH}_3\text{-CH}_2\text{-CH(CH}_3\text{)-CH(Cl)-CH}_3$
 C. $\text{CH}_3\text{-CH}_2\text{-CH(Cl)-CH(Cl)-CH}_3$
 D. $\text{CH}_3\text{-CH}_2\text{-CH(Cl)-CH(CH}_3\text{)-CH}_3$

106 Which of the following gives primary alcohol with Grignard reagent ?

- A. Acetaldehyde
B. Epoxide
 C. Acetone
 D. Carbon dioxide

107 What is the reason for the reactivity of Grignard reagent?

- A. Presence of Mg atom
 B. Polarity of C-H bond
C. Polarity of C-Mg bond
 D. Presence of electrophilic carbon

108 Which of the following is formed during SN_1 reactions?

- A. Secondary carbocation
 B. Primary carbocation
C. Tertiary carbocation
 D. Methyl carbocation

109 In SN_2 reactions, the hybridization of carbon in moving from substrate to transition state changes from ?

- A. sp^2 to sp^3
 B. sp to sp^2
C. sp^3 to sp^2
 D. sp to sp^3

110 Alkyl halide react with Sodium lead alloy, which of the following is correct formula of tetramethyl lead?

- A. $(\text{C}_2\text{H}_5)_4\text{Pb}$
B. $(\text{CH}_3)_4\text{Pb}$
 C. $(\text{CH}_4)_4\text{Pb}$
 D. $(\text{CH}_3)_4\text{Pd}$

111 Which of the following reactions have first step similar with each other?

- A. E_1, S_2

B. E_2, S_1

C. E_2, S_2

D. E_1, S_1

112 What is the common name of 2-methyl-2-chloropropane ?

- A. secondary propyl chloride
B. Tertiary butyl chloride
 C. Secondary butyl chloride
 D. Isobutyl Chloride

113 SN_1 reactions are favored by which of the following reactions?

- A. Water**
 B. Benzene
 C. Carbon Tetrachloride
 D. Carbon disulphide

114 The reaction in which a molecule is removed from a compound but no addition takes place is called as _____?

- A. Substitution reaction
B. Elimination reaction
 C. Addition reaction
 D. Replacement reaction

115 Which of the following reactions have first step similar with each other?

- A. E_1, S_2
 B. E_2, S_1
 C. E_2, S_2
D. E_1, S_1

116 Which of the following alkyl halide give SN_1 reactions?

- A. 1-chloropropane
 B. 2-chloropropane
 C. n-butyl chloride
D. 2-methyl,2-chloropropane

117 During the nomenclature of Alkyl halides, halogens are named as _____?

- A. Substituents**
 B. Parent name
 C. Ligand
 D. Longest chain

ALKYL HALIDES

118 During SN_1 mechanism, nucleophile can attack on the halogen carbon?

- A. From opposite side of leaving group
- B. From front of leaving group
- C. From both sides**
- D. None of these

119 First step in the SN_1 reaction is _____?

- A. Dehydration
- B. Protonation
- C. Ionization**
- D. Attack of nucleophile and departure of leaving group

120 In which phase SN_2 reactions are favored?

- A. Solid
- B. Liquid
- C. Gas**
- D. All of these

121 Which of the following reaction takes place when alkyl halide react with KOH in water?

- A. Substitution reaction**
- B. Elimination reaction
- C. Addition reaction
- D. None of these

122 Which of the following alkyl halide is most reactive towards Mg atom?

- A. Alkyl bromide
- B. Alkyl fluoride
- C. Alkyl chloride
- D. Alkyl iodide**

123 The product in SN_2 reaction is formed with _____?

- A. Inversion in configuration**
- B. Retention in configuration
- C. 50% retention in configuration
- D. 50% inversion in configuration

124 In SN_2 reaction, rate of reaction is directly proportional to concentration of _____?

- A. Substrate only
- B. Nucleophile

C. Substrate and nucleophile

D. All of these

125 Which one of the following is the correct IUPAC name of 2-Chloro,3-methylpentane?

- A. $CH_3-CH_2-CH(Cl)-CH(CH_3)-CH_3$
- B. $CH_3-CH_2-CH(CH_3)-CH(Cl)-CH_3$**
- C. $CH_3-CH_2-CH(Cl)-CH(Cl)-CH_3$
- D. $CH_3-CH_2-CH(Cl)-CH(CH_3)-CH_3$

126 The group which leaves from the substrate in a nucleophilic substitution reaction is called as _____?

- A. Leaving group**
- B. Electrophile
- C. Substrate
- D. Weak nucleophile

127 In SN_2 reaction, which of the following species is formed?

- A. Transition state**
- B. Intermediate
- C. Carbocation
- D. Carbanion

128 Reduction of alkyl halides in the presence of Zn and mineral acid produces _____?

- A. Alkenes
- B. Alkanes**
- C. Alkynes
- D. Alcohols

129 There is one lone pair present in H_3O^+ , it cannot act as _____?

- A. Electrophile
- B. Lewis acid
- C. Nucleophile**
- D. Strong acid

130 What is the correct order of reactivity of alkyl halides?

- A. $R-Cl > R-Br > R-F > R-I$

ALKYL HALIDES

B. $R-I > R-Br > R-Cl > R-F$

C. $R-I > R-Cl > R-Br > R-F$

D. None of these

131 Which of the following reaction is concerted (single step) ?

A. $SN_1, E1$

B. $SN_2, E1$

C. $SN_2, E2$

D. None of these

132 I^- is an example of _____?

A. Electrophile

B. Nucleophile

C. Leaving group

D. Both nucleophile and leaving group

133 Which of the following is an example of good leaving group?

A. Cl^-

B. ^-OH

C. ^-OR

D. $^-NH_2$

134 SN_1 reactions have which of the following specie formed and consumed in the reaction ?

A. Transition state

B. Intermediate

C. Carbanion

D. Carbene

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B. Lewis acid

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D. Strong acid

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A. Secondary carbocation

B. Primary carbocation

C. Tertiary carbocation

D. Methyl carbocation

137 The product in SN_2 reaction is formed with _____?

A. Inversion in configuration

B. Retention in configuration

C. 50% retention in configuration

D. 50% inversion in configuration

138 In a reaction having both alkyl halide and base, the base will attack on _____?

A. Electrophilic carbon

B. Nucleophilic carbon

C. beta-hydrogen

D. None of these

139 During the nomenclature of Alkyl halides, halogens are named as _____?

A. Substituents

B. Parent name

C. Ligand

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140 Which of the following bond has highest bond energy value ?

A. C-I

B. C-H

C. C-Cl

D. C-F

141 In a reaction having both alkyl halide and base, the base will attack on _____?

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B. Nucleophilic carbon

C. beta-hydrogen

D. None of these

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C. Ionization

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ALKYL HALIDES

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- A. 1st order
- B. zero order
- C. 2nd order**
- D. 3rd order

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- A. Presence of Mg atom
- B. Polarity of C-H bond
- C. Polarity of C-Mg bond**
- D. Presence of electrophilic carbon

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ALCOHOL, PHENOL

1 Phenol react with calcium carbonation and evolve _____?

- A. H_2 gas
- B. CO_2 gas
- C. O_2
- D. None

2 Which of following is an example of electrophilic attack on alcohols

- A. $C_2H_5OH + CH_3COOH \xrightarrow{H_2SO_4}$
- B. $2C_2H_5OH + 2Na \rightarrow 2C_2H_5ONa + H_2$
- C. $C_2H_5OH + HCl \xrightarrow{ZnCl_2} C_2H_5Cl + H_2O$
- D. both a and b

3 What is the other name of 2,4,6-trinitrophenol?

- A. Picric acid
- B. Nitrophenol
- C. TNT
- D. Benzophenone

4 What is the other name of 2,4,6-trinitrophenol?

- A. Picric acid
- B. Nitrophenol
- C. TNT
- D. Benzophenone

5 Tertiary alcohols upon reaction with oxidizing agents give _____ as major product?

- A. Carboxylic acids
- B. Alkene
- C. Alkyne
- D. Ester

6 Alcohol is dehydrated by the following reaction

- A. elimination reaction
- B. oxidation reaction
- C. combustion
- D. decomposition

7 Which of the following give methanol upon hydrogenation/reduction?

- A. $HCHO$
- B. CH_3CHO
- C. CH_3CN
- D. CH_3CH_2CHO

8 Iodoform test is performed to distinguish between

- A. alcohols and phenols
- B. methanol and ethanol
- C. primary and secondary alcohols
- D. phenols and ethers

9 Ethanol having 10% methanol in it is called as _____?

- A. Absolute alcohol
- B. Methylated alcohol
- C. Rectified spirit
- D. Pure alcohol

10 Which isomer of hydroxy benzoic acid is formed in greater ratio when phenol reacts with sulphuric acid at $20^\circ C$?

- A. Ortho
- B. Para
- C. Both ortho and para in equal ratio
- D. ortho-para product

11 Which of the following is a dihydric alcohol?

- A. Ethanol
- B. Methanol
- C. Glycerol
- D. Glycol

12 The compounds which are formed by the replacement of one of the H of water by a alkyl group are called as _____?

- A. Ethers
- B. Phenols
- C. Alcohols
- D. Carboxylic acids

13 Dehydration of alcohols at low temperature and high acid concentration results in?

- A. Alkene
- B. Ether
- C. Carboxylic acid
- D. Aldehydes

14 Optimum temperature range for the process of fermentation is

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ALCHOL ,PHENOL

- A. 2 - 3 °C
B. 25 - 35 °C
C. 27 - 33 °C
D. 4 - 45 °C

15 Which of the following does not react with bases?

- A. Carboxylic acids
B. Phenol
C. Ethanol
D. HC

16 Phenol is _____ liquid ?

- A. Dense
B. Hard
C. Deliquescent
D. Intermittent

17 An aromatic compound that can be obtained from coal tar is

- A. benzene
B. toluene
C. phenol
D. diphenyl methane

18 How is phenol produced from chlorobenzene?

- A. Using Kolbe's method
B. Using Dow's method
C. Using Zn dust
D. All of these

19 Reaction of ethylmagnesium bromide with acetone produces?

- A. Primary alcohol
B. Secondary alcohol
C. Tertiary alcohol
D. Methyl alcohol

20 Who first extracted phenol?

- A. Wöhler
B. Runge
C. Wittig
D. Wurtz

21 The alcohols having one hydroxyl group attached to the alkyl group are called as _____?

- A. Monohydric alcohols
B. Dihydric alcohols
C. Trihydric alcohols
D. Polyhydric alcohols

22 Which of the following compounds shows strong H-Bonding with water?

- A. C_2H_6
B. CH_3Br
C. CH_3OCH_3
D. C_2H_5OH

23 Ethanol forms yellow crystals with iodine in the presence of

- A. $ZnCl_2$
B. Conc. H_2SO_4 at 140 °C
C. NaOH
D. KOH

24 The solution of phenol in water has a pH of about?

- A. 4-5
B. 3-5
C. 2-4
D. 5-6

25 The method used for preparation of phenol is

- A. Kolbe's method
B. Dow's method
C. Nitration
D. Williamson's synthesis

26 Which catalyst is used when ethanol reacts with ammonia to produce ethylamine?

- A. $ZnCl_2$
B. C_6H_5N
C. Al_2O_3
D. ThO_2

27 Give IUPAC name of the following compound: Tert-Butanol

- A. 3-methyl-2-propanol
B. 3-methyl-1-propanol
C. 2-hydroxy-1-propanol
D. 2-methyl-2-propanol

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ALCHOL ,PHENOL

28 The alcohols in which the carbon which is attach to the OH group is further attach with two carbon atoms is called as?

- A. Primary alcohols
- B. Secondary alcohols**
- C. Tertiary alcohols
- D. None of these

29 Methylated spirit is formed by the addition of

- A. acetone
- B. pyridine
- C. 1 % methanol
- D. all of above**

30 Phenol was obtained from _____ first time?

- A. Coke
- B. Pitch
- C. Aromatic compounds
- D. Coal tar**

31 Give IUPAC name of following compound Tert-Butanol

- A. 3 - methyl-2-propanol
- B. 3-methyl-1-propanol
- C. 2-hydroxy-1-propanol
- D. 2-methyl-2-propanol**

32 The alcohols in which the carbon which is attach to the OH group is further attach with two carbon atoms is called as?

- A. Primary alcohols
- B. Secondary alcohols**
- C. Tertiary alcohols
- D. None of these

33 Methylated spirit is formed by the addition of

- A. acetone
- B. pyridine
- C. 1 % methanol
- D. all of above**

34 Alcohol having 5% water is called as _____?

- A. Absolute alcohol
- B. Methylated alcohol
- C. Rectified spirit**
- D. Pure spirit

35 Which phenol is most acidic in nature

- A. salicylic acid
- B. picric acid**
- C. cresol

D. O- nitrophenol

36 Following is termed as hydroxyl derivative of alkanes

- A. carboxylic
- B. Aldehydes
- C. Phenols and ethers
- D. Alcohols**

37 Which of the following product is formed when phenol reacts with sulphuric acid 100 °C?

- A. ortho-hydroxy benzene sulphonic acid
- B. Para-hydroxy benzene sulphonic acid**
- C. O and p- benzene sulphonic acid
- D. Both a and b

38 The method which is used on industrial scale for production of alcohol from alkene ?

- A. Hydrohalogenation of alkenes
- B. Dehydration of alkenes
- C. Hydration of alkenes**
- D. Hydroxylation of alkenes

39 Ethanol is used as

- A. a drink
- B. a fuel
- C. a preservative
- D. all of above**

40 Ethanol react which of the following reagent to form ethyl alcohol?

- A. $\text{H}_2\text{SO}_4/\text{H}_2\text{O}$
- B. NaOH
- C. PCl_3**
- D. All of these

41 The strongest acid among the following is

- A. carbolic acid
- B. H_2O
- C. Methanol
- D. Butanoic acid**

42 The alcohols which are resistant to oxidation reactions are

- A. primary alcohols
- B. secondary alcohol
- C. tertiary alcohol**

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D. all of above

43 The strength of an acid depends on _____?

A. Ease of removal of Proton

B. Stability of the anion formed

C. Stability of the cation form

D. Depends on both ease of removal of proton and stability of anion

44 Why phenol is more acidic than Alcohol?

A. Due to presence of resonance in phenol

B. Due to absence of resonance of in alcohol

C. Both a and b

D. Because in phenol H is attach to O

45 Which of the following is a strong acid?

A. Ethane

B. Ethyl Chloride

C. Ethanol

D. Phenol

46 Phenol is also called as?

A. Carbonic acid

B. Carboic acid

C. Acetic acid

D. Hydroxy acid

47 Which of the following compound shows more H-Bonding?

A. CH₃OH

B. CH₃CH₂OH

C. C₆H₅OH

D. C₆H₁₁OH

48 Methanol is also called as

A. liquor

B. grain alcohol

C. wood spirit

D. fuel

49 Which is un1 for phenols

A. a colourless crystalline solid

B. more reactive to electrophilic attack

C. form pink solution at room temperature

D. dissolves readily in acids

50 Which of the following compounds are added to ethanol to make it unfit for drinking?

A. Pyridine

B. Methanol

C. Acetone

D. All of these

51 The solubility of alcohols is due to

A. dipole moment

B. covalent bonds

C. hydrogen bonding

D. electronegativity

52 Which of the following catalyst is used in the industrial preparation of methanol?

A. Zinc oxide and alumina

B. Alumina and silica

C. Silica and Chromium oxide

D. Zinc oxide and Chromium oxide

53 Phenol is stronger acid then?

A. Carboxylic acids

B. Water

C. Acetic acid

D. None of these

54 What is the color of iodoform precipitates?

A. White

B. Black

C. Reddish

D. Yellow

55 Which of following has higher boiling and melting point

A. acetone

B. 2 - butanol

C. propane

D. 2 - methylpropene

56 Which of the following is an example of Tertiary alcohols?

A. 2 methyl-3-ethylpentane

B. 3-ethyl-3-hexanol

C. 2-methyl-4-hexanol

D. isopropyl alcohol

57 Ethanol is prepared on a large scale by

A. hydration of alkanes

B. distillation of wood

C. fermentation

D. williamson's synthesis

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58 Which of the following alcohol is most reactive in the reaction where O-H bond breaks?

- A. Primary alcohol
- B. Tertiary alcohol
- C. Methyl alcohol**
- D. Secondary alcohol

59 In cannizzaro's reaction, Benzyl alcohol is obtained from

- A. benzaldehyde**
- B. benzene
- C. picric acid
- D. benzyl chloride

60 In which of the following reaction C-O bond of alcohol breaks?

- A. Reaction with SOCl_2
- B. Dehydration
- C. Esterification**
- D. All of these

61 The biochemical process used in the synthesis of alcohol in the presence of yeast is called as _____?

- A. Respiration
- B. Photosynthesis
- C. Fermentation**
- D. Aerobic respiration

62 In Lucas test, tertiary alcohols form oily layer of alkyl halide _____?

- A. On heating
- B. Immediately**
- C. After 5-10 minutes
- D. After 20 minutes

63 Which of the following is used as disinfectant?

- A. Phenylhydrazine
- B. Phenol**
- C. Acetic acid
- D. Vinegar

64 Formation of picric acid by phenols is called

- A. Decomposition
- B. Halogenation
- C. Sulphonation**
- D. Nitration

65 The catalyst used for ether formation by dehydration of alcohols

- A. Cons HN_3 at 14 C
- B. Cons H_2SO_4 at 14 C**
- C. Hot H_3PO_4 at 18 C
- D. ZnCl_2 at 45 C

66 In order to get absolute alcohol following is added to absorb moisture

- A. MgO
- B. CaO**
- C. Co_2
- D. Cl_2

67 What is IUPAC name of isopropyl alcohol

- A. 2 - propanol**
- B. 1 - propanol
- C. 2 - ethanol
- D. 2 - propane-1-ol

68 Which of following shows maximum boiling point

- A. primary alcohol
- B. secondary alcohol
- C. tertiary alcohol**
- D. all of above

69 Which of the following is more soluble in water _____?

- A. Ethanol**
- B. Phenol
- C. Hexanol
- D. Dimethyl ether

70 Which of the following can be prepared by the reaction of Grignard reagent with aldehydes

- A. Ketones
- B. hydrocarbons
- C. alcohols**
- D. ethers

71 Which of the following is formed when phenol reacts with acetyl chloride?

- A. Alcohol
- B. Carboxylic acids
- C. Ester**
- D. Amines

72 A naphthol has

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ALCHOL ,PHENOL

- A. Alcoholic OH
- B. -CHO
- C. -COOH

D. Phenolic – OH

73 Tertiary alcohols can change into alkenes by

- A. combustion reaction
- B. oxidation

C. elimination reaction

- D. addition reaction

74 Which of the following ion is stable ?

- A. Ethoxide ion
- B. Tertiary Alkoxide ion
- C. Secondary anion

D. Phenoxide ion

75 The alkenes can be formed by alcohols in the presence of

- A. acidified KMnO_4
- B. acidified $\text{K}_2\text{Cr}_2\text{O}_7$**
- C. acidified CuCl_2
- D. pyridine

76 In industries, methanol is prepared from?

- A. Marsh gas
- B. Carbon dioxide and water
- C. Water gas**
- D. Methane + H_2

77 A substance formed by reduction of phenol with Zn is

- A. picric acid
- B. benzene**
- C. cresol
- D. carboic acid

78 Phenol is changed into cyclohexanol by the following method

- A. Hydrogenation**
- B. Reaction with formaldehyde
- C. Nitration
- D. Halogenation

79 When C -O bond breaks in alcohol, the most reactive is

- A. Primary alcohol) secondary alcohol) tertiary alcohol
- B. secondary alcohol
- C. tertiary alcohol**
- D. methanol

70 Which of the following enzymes present in yeast helps out in fermentation

- A. Diastase
- B. Maltase
- C. Zymase
- D. all of above**

80 Rectified spirit is converted into the absolute alcohol by _____ ?

- A. Crystallization
- B. Distillation
- C. Re-distillation**
- D. Fractional distillation

81 Which of the following method is used to prepare alcohols from alkenes?

- A. Reaction of alkenes with X_2/water
- B. Reaction of alkene with water
- C. Reaction of alkene with $\text{H}_2\text{SO}_4/\text{water}$**
- D. Reaction of alkene with Ni

82 Aldehydes and ketones can be obtained by the

- A. reduction of alcohol
- B. oxidation of alcohol**
- C. dehydration of alcohol
- D. hydrolysis of alcohol

83 When O-H bond breaks in alcohol is the order of reactivity

- A. Primary alcohol) secondary alcohol) tertiary alcohol
- B. methyl alcohol) primary alcohol) secondary alcohol) tertiary alcohol**
- C. Primary alcohol (secondary alcohol (tertiary alcohol
- D. ethanol) primary alcohol) secondary alcohol) tertiary alcohol

84 What is optimum temperature for the process of fermentation?

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ALCHOL ,PHENOL

- A. 10-15 degrees
- B. 25-30 degrees
- C. 25-35 degrees**
- D. 25-40 degrees

85 Glycerol can also be termed as

- A. 1 - butanol
- B. 1, 2, 3 - propanetriol**
- C. 2 - methyl - propanol
- D. ISObutyl alcohol

86 A polymer called Bakelite is formed by reaction of phenol with

- A. hydrogen
- B. ethers
- C. carboxylic acid
- D. formaldehyde**

87 Which of the following alcohol give iodoform test?

- A. Propanol
- B. Methanol
- C. Ethanol**
- D. Butanol

88 Which organic compound will form yellow crystals during iodoform test

- A. phenols
- B. acetone
- C. ethanol**
- D. methanol

89 Ethanol forms yellow crystal with iodine in the presence of

- A. $ZnCl_2$
- B. Cons H_2SO_4 at $14^\circ C$**
- C. $NaOH$
- D. KOH

90 Which of following is trihydric alcohol

- A. Glycol and cyclohexanol
- B. glycerol**
- C. ethylene glycol
- D. resorcinol

91 Alcohol is dehydrated by the following

reaction

- A. elimination reaction**
- B. oxidation reaction
- C. combustion
- D. decomposition

92 Ethanol obtained by the process of fermentation never exceeds to _____?

- A. 0.12
- B. 0.14**
- C. 0.2
- D. 0.32

93 When O-H bond breaks in alcohol is the order of reactivity

- A. Primary alcohol) secondary alcohol) tertiary alcohol
- B. methyl alcohol) primary alcohol) secondary**
- C. Primary alcohol (secondary alcohol (tertiary alcohol
- D. ethanol) primary alcohol) secondary alcohol) tertiary alcohol

94 The solution of phenol in water has a pH of about?

- A. 4-5
- B. 3-5
- C. 2-4
- D. 5-6**

95 Alcohol is dehydrated by the following reaction

- A. elimination reaction**
- B. oxidation reaction
- C. combustion
- D. decomposition

96 The organic compounds having close resemblance in structure as well properties are

- A. Glycol and cyclohexanol**
- B. Formaldehyde and benzol
- C. Diethyl ether and ethyl alcohol
- D. methanal and acetone

97 Phenol react with calcium carbonation and evolve _____?

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ALCHOL ,PHENOL

- A. H_2 gas
- B. CO_2 gas
- C. O_2

D. None of these

98 Phenol was obtained from _____ first time?

- A. Coke
- B. Pitch
- C. Aromatic compounds

D. Coal tar

99 Which of following is an example of electrophilic attack on alcohols

- A. $C_2H_5OH + CH_3COOH \xrightarrow{H_2SO_4}$
- B. $2C_2H_5OH + 2Na \rightarrow 2CH_3ONa + H_2$
- C. $C_2H_5OH + HCl \xrightarrow{ZnCl_2} C_2H_5Cl + H_2O$

D. both a and b

100 What is optimum temperature for the process of fermentation?

- A. 10-15 degrees
- B. 25-30 degrees
- C. 25-35 degrees
- D. 25-40 degrees

101 Which of the following catalyst is used in the industrial preparation of methanol?

- A. Zinc oxide and alumina
- B. Alumina and silica
- C. Silica and Chromium oxide
- D. Zinc oxide and Chromium oxide

102 Organic compounds that are considered as derivatives of water are

- A. Aldehydes & ketones
- B. Alcohols and phenols
- C. Phenols and ethers
- D. Carboxylic acids

103 A substance formed by reduction of phenol with Zn is

- A. picric acid
- B. benzene
- C. cresol
- D. carboic acid

104 What is IUPAC name of isopropyl alcohol

- A. 2 - propanol
- B. 1 - propanol
- C. 2 - ethanol
- D. 2 - propane-1-ol

105 What is the other name of 2,4,6-trinitrophenol?

- A. Picric acid
- B. Nitrophenol
- C. TNT
- D. Benzophenone

106 When an electrophilic reagent attack on alcohol

- A. O- H bond formed
- B. O- H bond breaks
- C. C- O bond breaks
- D. rise in boiling point

107 Alcohol is dehydrated by the following reaction

- A. elimination reaction
- B. oxidation reaction
- C. combustion
- D. decomposition

108 Which of the following give methanol upon hydrogenation/reduction?

- A. $HCHO$
- B. CH_3CHO
- C. CH_3CN
- D. CH_3CH_2CHO

109 Iodoform test is performed to distinguish between

- A. alcohols and phenols
- B. methanol and ethanol
- C. primary and secondary alcohols
- D. phenols and ethers

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ALDEHYDES AND KETONES

1 In the reaction of NaBH_4 with aldehyde and ketones, which of the following act as Nucleophile ?

- A. B^-
- B. H^-**
- C. BH_2^-
- D. NaBH_3^-

2 Why aldehydes are more reactive than ketones?

- A. Electronic reasons
- B. Steric hindrance
- C. Both a and b**
- D. None of these

3 Which of the following reaction takes place when acetone reacts with HCN ?

- A. Electrophilic addition
- B. Nucleophilic elimination
- C. Nucleophilic addition**
- D. Electrophilic addition

5 Which color of precipitates are formed when carbonyl compounds react with 1,2-dinitrophenylhydrazine?

- A. Yellow or red**
- B. Orange or blue
- C. Green or red
- D. Yellow or orange

6 During catalytic reduction of carbonyl compounds, hydrogen adds across?

- A. $\text{C}=\text{C}$
- B. $\text{C}-\text{H}$
- C. $\text{C}=\text{O}$**
- D. All of these

7 Carbonyl system having no α hydrogen undergoes _____?

- A. Aldol condensation
- B. Cannizzaro reaction**
- C. Haloform reaction
- D. Oxidation reaction

8 Which of the following test is not given by Aldehyde ?

- A. Benedict test
- B. Tollen's test

D. Fehling's test

9 Bulky ketones do not react with

- A. Sodium bisulphite**
- B. HCl
- C. Grignard reagent
- D. HCN

10 Before giving condensation product, ammonia and its derivatives produces _____ when react with carbonyls?

- A. Alcohols
- B. Carboxyl alcohol
- C. Amino alcohol**
- D. None of these

11 Acetaldehyde undergoes polymerization with conc. H_2SO_4 and form _____?

- A. Acetylides
- B. Paraldehyde**
- C. Bakelite
- D. Meta Acetaldehyde

12 NaBH_4 causes reduction of aldehyde and ketones into _____?

- A. Alcohols**
- B. Alkenes
- C. Phenols
- D. Alkanes

13 Aldehydes and ketones react with hydroxyl amine and produce?

- A. Imine
- B. Oxime**
- C. Aldole
- D. Nitrile

14 In IUPAC nomenclature, aldehydes are named as _____?

- A. Alkanol
- B. Alkanal**

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- C. Alkanone
 D. Alkaldehyde

15 From which of the following ketone can be prepared?

- A. Propyne
 B. Secondary alcohol
 C. Ca Acetate
D. All of these

16 Which of the following product is formed when aldol product is heated?

- A. Rearrangement
B. Dehydration
 C. Decomposition
 D. All of these

17 Which one of the following shows that iodoform test for a compound is positive?

- A. Formation of carboxylate salt
 B. Brick red precipitate formation
C. Yellow crystals
 D. Formation of water

18 Benzophenone is also known as :

- A. Diphenyl ketone**
 B. Ethyl Phenyl ketone
 C. Tri Phenyl ketone
 D. None of these

19 If both alkyl groups attached to carbonyl in ketone are same then it is called as _____?

- A. Mixed
 B. Unsymmetrical
C. Symmetrical
 D. None of these

20 Distillation of calcium acetate and calcium formate produces _____?

- A. Formaldehyde
B. Acetaldehyde
 C. Acetone
 D. None of these

21 If both alkyl groups attached to carbonyl in ketone are same then it is called as _____?

- A. Mixed
 B. Unsymmetrical
C. Symmetrical
 D. All of these

22 Which of the following give silver mirror test ?

- A. Butanal
 B. Methanal
 C. Ethanal
D. All of these

23 Why oxidation of ketones is not easy _____?

- A. Because they involve breaking of C-O bond
B. Because it involve breaking of C-C bond
 C. Because it involve breaking of C-H bond
 D. Because it involve breaking of C=C bond

24 Addition of ammonia and its derivative catalyze by _____?

- A. Acid**
 B. Base
 C. Oxidizing agents
 D. Pd/C

25 Aldehydes and ketones are _____?

- A. Aromatic compounds
 B. Acidic compounds
C. Carbonyl compounds
 D. Electrophiles

26 What is the general formula of Aldehyde?

- A. RCO
 B. RCOOR
C. RCHO
 D. RCOOH

27 On industrial scale which catalyst is used for the preparation of methanol?

- A. $K_2Cr_2O_7$
 B. $PdCl_2$
C. FeO, Mo_2O_3
 D. $CuCl_2$

27 Formaldehyde polymerizes to form ?

- A. Bakelite
 B. Paraldehyde
C. Metaformaldehyde
 D. All of these

28 In which of the following reagent Cupric citrate complex is formed?

- A. Fehling's solution test
B. Benedict's solution test
 C. Silver mirror test
 D. sodium nitroprusside test

29 Which one of the following does not give iodoform test ?

- A. Acetaldehyde
- B. 3-hexanone**
- C. Butanone
- D. Acetone

Aldehyde and ketone

30 Which of the following is the function of formalin?

- A. Antiseptic
- B. Disinfectant
- C. Germicide
- D. All of these**

31 Aldehyde react with Ammonia and form _____?

- A. Amine
- B. Imine**
- C. Nitrile
- D. Hydrazones

32 Bisulfite addition product when heated with mineral acid yield?

- A. Carboxylic acid
- B. Alpha hydroxy acid
- C. Starting material from which it is formed**
- D. Alpha beta unsaturated compound

33 What is the nature of Carbon present in Aldehyde is?

- A. Nucleophilic
- B. Electrophilic**
- C. Neutral
- D. all of these

34 In acid catalyzed nucleophilic addition reactions, which of the following property of carbonyl system enhance ?

- A. Electrophilicity**
- B. Nucleophilicity
- C. Basicity
- D. Acidity

35 What is the Hybridization of carbon atom in Aldehyde group?

- A. sp^2**
- B. sp^3
- C. sp
- D. dsp^2

36 In nomenclature, aldehyde group in all aldehydes are given position 1 and its position is not mentioned in the name because?

- A. Aldehyde is given priority
- B. Aldehyde is parent
- C. Aldehyde group is present at terminal**
- D. None of these

37 Which of the following compound is present in camphor and menthone?

- A. Aldehyde
- B. Alcohol
- C. Esters
- D. Ketones**

38 Which of the following is used in silvering of mirror in industries _____?

- A. Acetone
- B. Propanol
- C. Ethanal
- D. Butanone

39 Cyanohydrins when reacted with mineral acid produces _____?

- A. Beta Hydroxy carboxylic acids



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B. Alpha hydroxy carboxylic acids

- C. Carboxylic acids
- D. Unsaturated acids

40 Formaldehyde is used in vat dyeing as?

- A. Coloring agent
- B. Dehydrating agents
- C. Decolorizing agent**
- D. Solubilizing agent

41 Base catalyzed reaction of carbonyl group takes place in presence of :

- A. Weak electrophile
- B. Strong nucleophile**
- C. Weak nucleophile
- D. Strong electrophile

42 Self-oxidation reduction reaction is also called as _____?

- A. Dehydration
- B. Condensation reaction
- C. Disproportionation reaction**
- D. Proportionation reaction

43 Nucleophilic addition reactions of carbonyl compounds can be catalyzed by _____?

- A. Acid
- B. Base
- C. Water
- D. Both acid and base**

44 Which of the following undergoes cannizzaro reaction _____?

- A. Benzaldehyde**
- B. Acetone
- C. Benzophenone
- D. Benzyl alcohol

45 During base catalyzed reactions, which property of nucleophile increases?

- A. Basicity
- B. Nucleophilicity**
- C. Electrophilicity
- D. Both b and c

46 Acetaldehyde in the presence of $\text{Con.H}_2\text{SO}_4$ undergoes _____?

- A. Dehydration
- B. Polymerization**

- C. Condensation
- D. Oxidation reaction

47 In the addition of sodium bisulfite to carbonyl system, which of the following is nucleophile?

- A. Sulphide ion
- B. Sulfite ion**
- C. Hydride ion
- D. Sodium ion

48 The reaction of two similar carbonyl compounds to give aldol product is called as _____?

- A. Condensation reaction**
- B. Dehydration reaction
- C. Disproportionation reaction
- D. All of these

49 For aldol condensation, carbonyl system must have _____?

- A. Beta hydrogen
- B. Beta carbon
- C. Alpha carbon
- D. Alpha hydrogen**

50 Which of the following compound does not give cannizzaro reaction?

- A. Benzaldehyde
- B. Trimethyl acetaldehyde
- C. Formaldehyde
- D. Acetaldehyde**

51 Bulky ketones do not react with

- A. Sodium bisulphite**
- B. HCl
- C. Grignard reagent
- D. HCN

52 Reaction of Aldehydes with Tollen's reagent results in formation of _____?

- A. Red precipitate
- B. Yellow precipitate
- C. Silver mirror**
- D. Brick red precipitate

53 The Addition of Hydrogen cyanide in Formaldehydes give which product?

- A. 2- Hydroxypropanoic acid
- B. 2- methylpropanenitrile

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C. Hydroxyacetonitrile

D. 2- Hydroxypropanenitrile

54 In IUPAC nomenclature , ketones are named as _____?

A. Alkanol

B. Alkanal

C. Alkanone

D. Alkyl halides

55 In case of oxidation of symmetrical ketone, which of the following products are formed ?

A. One Carboxylic acid

B. Mixture of different carboxylic acids

C. Same type of carboxylic acids

D. None of these

56 The carbonyl compound which is attached with at least one H atom at one side is called as _____?

A. Ketones

B. Aldehydes

C. Ethers

D. Alkyl halides

57 Which of the following Compound is not reduced by NaBH_4 ?

A. Acetaldehyde

B. Acetone

C. Carboxylic acid

D. Alkene

58 Which is an aromatic Aldehyde?

A. Propanone

B. Pentanol

C. Benzaldehyde

D. Hexanol

59 Aldehydes can be oxidized by _____?

A. $\text{K}_2\text{Cr}_2\text{O}_7$

B. HNO_3

C. Tollen's reagent

D. All of these

60 Aldehydes are obtained by the oxidation of which of the following ?

A. Secondary alcohols

B. Tertiary alcohols

C. Dihydric alcohol

D. Primary alcohols

61 During reduction of aldehydes with NaBH_4 , which of the following intermediate is formed ?

A. Carbanion

B. Carbocation

C. Carbene

D. Alkoxide ion

62 Which of the following centers are present in the carbonyl compounds?

A. Electrophilic

B. Nucleophilic

C. Electron deficient

D. All of these

63 During benedict's solution test Brick red precipitates are formed due to formation of _____?

A. CuO

B. RCOONa

C. Cu_2O

D. $\text{Cu}(\text{OH})_2$

64 What one is the correct geometry of acetal?

A. Trigonal

B. Linear

C. Tetrahedral

D. Square planer

65 Which of the following test can detect presence of both Aldehydes and ketones ?

A. Tollen's test

B. Reaction with hydrazine

C. Reaction with 2,4-dinitrophenylhydrazine

D. Reaction with Ammonia

66 Aldehydes and ketones are _____?

A. Aromatic compounds

B. Acidic compounds

C. Carbonyl compounds

D. Electrophiles

67 In aldol condensation, nucleophile is _____?

A. Hydroxyl ion

B. Carbocation

C. Carbanion

D. Water

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68 During preparation of Acetaldehyde from ethanol in laboratory, why acetaldehyde is distilled off quickly after formation?

- A. To avoid decomposition of product
- B. To avoid reduction
- C. To avoid further oxidation to acetic acid**
- D. None of these

69 Reduction of ketones produce _____?

- A. Aldehydes
- B. Methanol
- C. Primary alcohols
- D. Secondary alcohols**

70 Which of the following product is formed when Alcohol is added to acetaldehyde ?

- A. **Acetal**
- B. Ketal
- C. Carboxylic acid
- D. Alcohol

71 Condensation involve which of the following reactions?

- A. Elimination + addition**
- B. Elimination + Substitution
- C. Addition + substitution
- D. None of these

72 Nucleophilic addition reactions of carbonyl compounds can be catalyzed by _____?

- A. Acid
- B. Base
- C. Water
- D. Both acid and base**

73 Which of the following is the correct IUPAC name of acetone?

- A. Propanone
- B. 3-Propanone
- C. 2-Butanone
- D. 2-Propanone**

74 40% aqueous solution of formaldehyde is called as _____?

- A. Pharmalin
- B. Paraldehyde
- C. Formamint
- D. Formalin**

75 Formaldehyde is used in vat dyeing as?

- A. Coloring agent
- B. Dehydrating agents
- C. Decolorizing agent**
- D. Solubilizing agent

76 During oxidation of unsymmetrical ketones which atom is oxidized?

- A. Carbonyl carbon
- B. Carbon attach to smaller number of hydrogen atom**
- C. Carbon attach to larger number of Hydrogen atoms
- D. Hydrogen

77 Both ketones and aldehyde are present in _____?

- A. Sugars**
- B. Menthone
- C. Camphor
- D. Formamint

78 Condensation involve which of the following reactions?

- A. Elimination + addition**
- B. Elimination + Substitution
- C. Addition + substitution
- D. None of these

79 Aldol condensation takes place in the presence of _____?

- A. H_2SO_4
- B. $K_2Cr_2O_7$
- C. NaOH**
- D. H_2O/H^+

80 Aldole consist of which functional group?

- A. Aldehyde
- B. Alcohol
- C. Both a and b**
- D. Ketone

81 Which of the following products are formed from cannizzaro reaction?

- A. Aldol product
- B. Alcohol and carboxylate salt**
- C. Alcohol and carboxylic acid
- D. Unsaturated reaction

82 Which of the following is the function of formalin?

- A. Antiseptic



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- B. Disinfectant
- C. Germicide
- D. All of these**

83 In nomenclature, aldehyde group in all aldehydes are given position 1 and its position is not mentioned in the name because?

- A. Aldehyde is given priority
- B. Aldehyde is parent
- C. Aldehyde group is present at terminal**
- D. None of these

84 Formaldehyde polymerizes to form ?

- A. Bakelite
- B. Paraldehyde
- C. Metaformaldehyde**
- D. All of these

85 What is the general formula of Aldehyde?

- A. $RCOR$
- B. $RCOOR$
- C. $RCHO$**
- D. $RCOOH$

86 If both alkyl groups attached to carbonyl in ketone are same then it is called as _____?

- A. Mixed
- B. Unsymmetrical
- C. Symmetrical**
- D. None of these

87 Which of the following product is formed when aldol product is heated?

- A. Rearrangement
- B. Dehydration**
- C. Decomposition
- D. All of these

88 In case of oxidation of symmetrical ketone, which of the following products are formed ?

- A. One Carboxylic acid
- B. Mixture of different carboxylic acids
- C. Same type of carboxylic acids**
- D. None of these

89 Which of the following compound is present in camphor and menthone?

- A. Aldehyde
- B. Alcohol
- C. Esters
- D. Ketones**

90 In the addition of sodium bisulfite to carbonyl system, which of the following is nucleophile?

- A. Sulphide ion
- B. Sulfite ion**
- C. Hydride ion
- D. Sodium ion

91 Which of the following Compound is not reduced by $NaBH_4$?

- A. Acetaldehyde
- B. Acetone
- C. Carboxylic acid
- D. Alkene**

92 Distillation of calcium acetate and calcium formate produces ?

- A. Formaldehyde
- B. Acetaldehyde**
- C. Acetone
- D. None of these

93 The carbonyl compound which is attached with at least one H atom at one side is called as _____?

- A. Ketones
- B. Aldehydes**
- C. Ethers
- D. Alkyl halides

94 Phenolic resins are produce by _____?

- A. Formaldehyde
- B. Acetaldehyde**
- C. Acetone
- D. Butyraldehyde

95 Which product is obtained by Distillation of calcium acetate ?

- A. Acetone**
- B. Acetaldehyde
- C. Formaldehyde
- D. Carboxylic acid

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96 Formalin solution contains how much water?

- A. 52%
- B. 8%
- C. 40%**
- D. 30%

97 The product of the nucleophilic addition of aldehyde and ketones is called as _____?

- A. Alkanolone
- B. Adduct**
- C. Cyanohydrin
- D. Nucleophilic product

98 Tollen's reagent is ammoniacal solution of _____?

- A. Silver nitrate**
- B. Silver acetate
- C. Cupric tartrate
- D. Cupric citrate

99 Aldol condensation takes place in the presence of _____?

- A. H_2SO_4
- B. $K_2Cr_2O_7$
- C. NaOH**
- D. H_2O/H^+

100 In the reaction of $NaBH_4$ with aldehyde and ketones, which of the following act as Nucleophile?

- A. B^-
- B. H^-**
- C. BH_2^-
- D. $NaBH_3^-$

101 Why aldehydes are more reactive than ketones?

- A. Electronic reasons
- B. Steric hindrance
- C. Both a and b**
- D. None of these

102 Which of the following reaction takes place when acetone reacts with HCN?

- A. Electrophilic addition
- B. Nucleophilic elimination
- C. Nucleophilic addition**

D. Electrophilic addition

103 Which color of precipitates are formed when carbonyl compounds react with 1,2-dinitrophenylhydrazine?

- A. Yellow or red**
- B. Orange or blue
- C. Green or red
- D. Yellow or orange

104 During catalytic reduction of carbonyl compounds, hydrogen adds across?

- A. $C=C$
- B. $C-H$
- C. $C=O$**
- D. All of these

105 Carbonyl system having no α hydrogen undergoes _____?

- A. Aldol condensation
- B. Cannizzaro reaction**
- C. Haloform reaction
- D. Oxidation reaction

106 Which of the following test is not given by Aldehyde?

- A. Benedict test
- B. Tollen's test
- C. Nitroprusside test**
- D. Fehling's test

107 Bulky ketones do not react with

- A. Sodium bisulphite**
- B. HCl
- C. Grignard reagent
- D. HCN

108 Before giving condensation product, ammonia and its derivatives produces _____ when react with carbonyls?

- A. Alcohols
- B. Carboxyl alcohol
- C. Amino alcohol**
- D. None of these

109 Acetaldehyde undergoes polymerization with conc. H_2SO_4 and form _____?

- A. Acetylides
- B. Paraldehyde**
- C. Bakelite
- D. Meta Acetaldehyde

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CARBOXYLIC ACIDS

1 How carboxylic acid are formed from alcohol?

- A. Hydrolysis
- B. Reduction
- C. Oxidation**
- D. Protonation

2 The reactions of carboxylic acids which involve H atom removal of OH group form _____ as major products in all reactions?

- A. Esters
- B. Nitriles
- C. Ketones
- D. Salts**

3 Which of the following is most soluble in water ?

- A. Ethanoic acid**
- B. Pentanoic acid
- C. Hexanoic acid
- D. Butanoic acid

4 The formation of acid anhydride from carboxylic acid is a _____?

- A. Dehydration reaction
- B. Condensation reaction
- C. Both a and b**
- D. None of these

5 Which of the following properties belong to acetic acid?

- A. colourless liquid, odourless, sour taste**
- B. bright colour bitter taste
- C. colourless solid, sour taste, pungent smell
- D. all are incorrect

6 Which of the following carboxylic acid is used as solvent in the labs ?

- A. Butanoic acid
- B. Hexanedioic acid
- C. Phthalic acid
- D. Acetic acid**

7 Which of the following is a Unsaturated fatty acid?

- A. Palmitic acid

B. Stearic acid

C. Oleic acid

D. Ethanoic acid

8 Which one of the product is obtained when acetic acid reacts with Ethyl alcohol in the presence of mineral acid ?

- A. CO
- B. $\text{CH}_3\text{COOCH}_3$
- C. $\text{CH}_3\text{CH}_2\text{COOH}$
- D. $\text{CH}_3\text{COOCH}_2\text{CH}_3$**

9 Carboxylic acids having long aliphatic chain are called as _____?

- A. Long carboxylic acids
- B. Higher carboxylic acids
- C. Fatty acids**
- D. Glycerols

10 Nucleophilic reactions of carboxylic acids are due to _____?

- A. Presence of OH bond
- B. Presence of C-O single bond
- C. Presence of C-O double bond**
- D. None of these

11 In Which of the following reaction of carboxylic acids only C=O group involved in bonding and OH group is replaced ?

- A. Reaction of carboxylic acid with NaOH
- B. Reaction of carboxylic acids with Carbonate
- C. Formation of anhydride
- D. Reaction of carboxylic acids with SOCl_2**

12 Fruity smell of organic compounds is because of _____?

- A. Alcohols
- B. Carboxylic acid
- C. Ester**
- D. Acidhalids

13 Formic acid is obtained from _____?

- A. Apples
- B. Butter
- C. Ant's sting**

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CARBOXYLIC ACIDS

D. Foam

14 When two carboxylic acids are strongly heated in the presence of P_2O_5 , which product is formed ?

- A. Acid halides
- B. Dimer
- C. Acid anhydride**
- D. None of these

15 From which of the following sources acetic acid was first isolated ?

- A. Butter
- B. Milk
- C. Cheese
- D. Vinegar**

16 How carboxylic acid are formed from alcohol?

- A. Hydrolysis
- B. Reduction
- C. Oxidation**
- D. Protonation

17 The reactions of carboxylic acids which involve H atom removal of OH group form _____ as major products in all reactions?

- A. Esters
- B. Nitriles
- C. Ketones
- D. Salts**

18 Which of the following is most soluble in water ?

- A. Ethanoic acid**
- B. Pentanoic acid
- C. Hexanoic acid
- D. Butanoic acid

19 The formation of acid anhydride from carboxylic acid is a _____?

- A. Dehydration reaction
- B. Condensation reaction
- C. Both a and b**
- D. None of these

20 Which of the following evolve Carbon Dioxide with sodium bicarbonate?

- A. CH_3COOCH_3
- B. CH_3CH_2OH
- C. CH_3CH_2COOH**
- D. $CH_3COOOCH_3$

21 Carboxylic acids are produced by the oxidation of _____?

- A. Alcohol
- B. Aldehyde
- C. Ketone
- D. All of these**

22 Which of the following is correct general formula of aliphatic carboxylic acid ?

- A. $RCOOH$**
- B. $ArCOOH$
- C. $PhCOOH$
- D. None of these

23 What is the boiling point of acetic acid ?

- A. $120^\circ C$
- B. $118^\circ C$**
- C. $110^\circ C$
- D. $87^\circ C$

24 Which of the following derivative of carboxylic acid is used as flavoring agent ?

- A. Acid halides
- B. Acid carbonyls
- C. Esters**
- D. Acid amides

26 Carboxylic acids are formed by the hydrolysis of _____?

- A. Ester, Nitriles**
- B. Nitriles, amines
- C. Alkenes, Alkynes
- D. Esters, Alcohols

27 Freezing point of acetic acid;

- A. $16.6^\circ C$**
- B. $18^\circ C$
- C. $-20^\circ C$
- D. $10^\circ C$

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CARBOXYLIC ACIDS

28 Polyvinyl acetate is polymer of _____?

- A. Acetyl acetate
- B. Vinyl acetate**
- C. Chloro acetate
- D. Benzyl acetate

29 Nucleophilic reactions of carboxylic acids are due to _____?

- A. Presence of OH bond
- B. Presence of C-O single bond
- C. Presence of C-O double bond**
- D. None of these

30 Which functional group does amino acid contains;

- A. carbonyl group
- B. ester and alkyl halide
- C. carboxylic acid
- D. carboxylic acid and amine functionality**

31 Which of the following is an example of aromatic carboxylic acid?

- A. Ethanoic acid
- B. Butanoic acid
- C. Adipic acid
- D. Phthalic acid**

32 Which one of the following is the formula of stearic acid?

- A. $C_{17}H_{33}COOH$
- B. $C_{17}H_{35}COOH$**
- C. C_7H_3COOH
- D. $C_{15}H_{30}COOH$

33 Formic acid is obtained from _____?

- A. Apples
- B. Butter
- C. Ant's sting**
- D. Foam

34 Which of the following is correct general formula of aliphatic carboxylic acid?

- A. $RCOOH$**
- B. $ArCOOH$
- C. $PhCOOH$
- D. None of these

35 Which of the following acid is used as a coagulant for latex in the rubber industry?

- A. Acetic acid**
- B. Butyric acid
- C. Propanoic acid
- D. All of these

36 Which of the following is weaker acid?

- A. HCl
- B. H_2SO_4
- C. CH_3COOH**
- D. H_3PO_4

37 Which of the following is not a derivative of carboxylic acid?

- A. Alkyl Halide**
- B. Acetamide
- C. Ester
- D. Anhydride

38 Which of the following is an example of Tricarboxylic acids?

- A. Maleic acid
- B. Citric acid**
- C. Butyric acid
- D. None of these

39 Which of the carboxylic acid is used in medicine as local irritant;

- A. formic acid
- B. acetic acid**
- C. benzoic acid
- D. amino acid

40 Which of the carboxylic acid in diluted form is used as vinegar?

- A. Formic acid
- B. acetic acid**
- C. benzoic acid
- D. amino acid

41 Which of the following does not contain $COOH$ group?

- A. Acetone
- B. Propanoic acid**

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C. Formic acid

D. Picric acid

42 Acetaldehyde oxidation will lead to formation of

A. Acetic acid

B. Butanoic acid

C. Propanoic acid

D. Ester

43 Which of the carboxylic acid in diluted form is used as vinegar?

A. Formic acid

B. acetic acid

C. benzoic acid

D. amino acid

45 On reacting with which of the following carboxylic acids produce CO_2 ?

A. Carbonate

B. Bicarbonate

C. Bisulphites

D. Both a and b

46 The reactions of carboxylic acids which involve H atom removal of OH group form _____ as major products in all reactions?

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B. Nitriles

C. Ketones

D. Salts

47 How carboxylic acid are formed from alcohol?

A. Hydrolysis

B. Reduction

C. Oxidation

D. Protonation

48 Which of the following acid is used as a coagulant for latex in the rubber industry?

A. Acetic acid

B. Butyric acid

C. Propanoic acid

D. All of these

49 Flavour of Orange is due to the presence of _____ ester?

A. Benzyl acetate

B. Octyl Acetate

C. Amyl Butyrate

D. Ethyl butyrate

50 ethanenitrile gives acetic acid through;

A. Formamide

B. Acetamide

C. Benzoic acid

D. Acetaldehyde

51 Reduction of ethanoic acid with LiAlH_4 produces _____?

A. Propanol

B. Ethanal

C. Ethanol

D. Ethane

52 Which of the following group is present in carboxylic acids?

A. a carboxyl group

B. a hydroxyl group

C. a hydroxyl and carboxyl group

D. a carbonyl and aldehyde group

53 2-hydroxy propanoic acid is also called as _____?

A. Stearic acid

B. Butyric acid

C. Maleic acid

D. Lactic acid

54 In IUPAC nomenclature, Carboxylic acids are named as _____?

A. Alkoxy acid

B. Alkanoic acid

C. Alkyl carboxylic acid

D. Alkoxylate acid

55 Which of the following does not contain COOH group?

A. Acetone

B. Propanoic acid

C. Formic acid

D. Picric acid

56 Acetic acid is also named as _____?

A. Propanoic acid

B. Butanoic acid

C. Ethanoic acid

D. Methanoic acid

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57 On reacting with which of the following carboxylic acids produce CO_2 ?

- A. Carbonate
- B. Bicarbonate
- C. Bisulphites
- D. Both a and b

58 Which of the following group is present in carboxylic acids?

- A. a carboxyl group
- B. a hydroxyl group
- C. a hydroxyl and carboxyl group
- D. a carbonyl and aldehyde group

59 Acetic acid is soluble in;

- A. Water, Alcohol, Ether
- B. HCl, HBr, HI
- C. Bromine water
- D. All of these

60 Flavour of Orange is due to the presence of _____ ester?

- A. Benzyl acetate
- C. Amyl Butyrate
- D. Ethyl butyrate

61 Boiling point of carboxylic acids are high due to?

- A. Polarity of carbonyl group
- B. Due to methyl group
- C. Due to H-Bonding
- D. Due London forces

62 Butyric acid is derived from the word butyrum which means _____?

- A. Milk
- B. Butter
- C. Cheese
- D. None of these

63 Which type of carboxylic acid is produced from the hydrolysis of nitriles?

- A. Beta-hydroxy carboxylic acids
- B. Acids having one carbon more than the starting material
- C. Acids having one carbon less than the starting material

D. Alpha-hydroxy acids

64 Solubility of carboxylic acids _____?

- A. Decreases with increase of volume
- B. Decreases with increase in molecular mass
- C. Increases with increase in molecular mass
- D. None of these

65 How acetic acid is commercially synthesized;

- A. from acetylene hydrogenation
- B. from oxidation of ethyl alcohol
- C. from oxidation of benzaldehyde
- D. all of these

66 Which of the following is correct general formula of aliphatic carboxylic acid ?

- A. RCOOH
- B. ArCOOH
- C. PhCOOH
- D. None of these

67 Which of the following derivative of carboxylic acid is used as flavoring agent ?

- A. Acid halides
- B. Acid carbonyls
- C. Esters

68 Acetic acid can be used in _____?

- A. In synthesizing pickles
- B. In paints
- C. In pesticides
- D. all of these

69 Which of the carboxylic acid is used in medicine as local irritant;

- A. formic acid
- B. acetic acid
- C. benzoic acid
- D. amino acid

70 Reagent like $\text{K}_2\text{Cr}_2\text{O}_7$ and H_2SO_4 lead to _____?

- A. Reduction
- B. Hydrolysis
- C. Dehydration
- D. Oxidation

71 Acetic acid is used in making _____?

- A. Neoprene

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CARBOXYLIC ACIDS

B. Chloroprene

C. Silk

D. Polystyrene

72 Carboxylic acid reduction to alcohol can be achieved by using?

A. H_2/Ni

B. Pd/C

C. $NaBH_4$

D. $LiAlH_4$

73 What is the boiling point of acetic acid ?

A. $120^\circ C$

B. $118^\circ C$

C. $110^\circ C$

D. $87^\circ C$

74 Which of the following acid is used a coagulant for latex in the rubber industry ?

A. Acetic acid

B. Butyric acid

C. Propanoic acid

D. All of these

75 Reduction of carboxylic acids into alkanes in the presence of H/P , $COOH$ is reduced to _____?

A. CH_4

B. C_2H_6

C. CH_2

D. None of these

76 Alcohol oxidation gives carboxylic acid through

A. Amide

B. Carbonic acid

C. Ketone

D. Aldehyde

77 Which of the following can not be prepared directly from acetic acid ?

A. Ethyl acetate

B. Acetamide

C. Acetyl Halide

D. Acetic anhydride

78 On reacting with metals carboxylic acid produces which of the following products ?

A. Salt + water

B. Salt

C. Salt + H_2 gas

D. Salt + Alcohol

79 Reaction of carboxylic acids with base is a _____ reaction ?

A. Neutralization

B. Esterification

C. Oxidation

D. All of these

80 Which of the following flavour is due to Amyl acetate ?

A. Jasmine

B. Pineapple

C. Banana

D. Orange

81 Propanoic acid is produced when _____?

A. Methyl $MgBr$ react with CO_2

B. Isopropyl $MgBr$ react with CO_2

C. Ethyl $MgBr$ react with CO_2

D. Propyl $MgBr$ react with CO_2

82 Freezing point of acetic acid;

A. $16.6^\circ C$

B. $18^\circ C$

C. $-20^\circ C$

D. $10^\circ C$

83 Which of the following is not a derivative of carboxylic acid?

A. Alkyl Halide

B. Acetamide

C. Ester

D. Anhydride

84 Carboxylic acids are produced by the oxidation of _____?

A. Alcohol

B. Aldehyde

C. Ketone

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CARBOXYLIC ACIDS

D. All of these

85 Carboxylic acids form dimer due to _____?

- A. Small sizes
- B. Polarity of C-O bond
- C. H-bonding**
- D. Dipole-Dipole interactions

86 Carboxylic acids are formed by the hydrolysis of _____?

- A. Ester, Nitriles**
- B. Nitriles, amines
- C. Alkenes, Alkynes
- D. Esters, Alcohols

87 What is the hybridization of carbon in -COOH group?

- A. sp^2**
- B. sp^3
- C. sp
- D. None of these

88 Which of the following evolve Carbon Dioxide with sodium bicarbonate?

- A. CH_3COOCH_3
- B. CH_3CH_2OH
- C. CH_3CH_2COOH**
- D. CH_3COOCH_3

89 Which of the following is an example of Tricarboxylic acids?

- A. Maleic acid
- B. Citric acid**
- C. Butyric acid
- D. None of these

90 On Hydrolysis with dilute HCl, ethanenitrile gives acetic acid through:

- A. Formamide
- B. Acetamide**
- C. Benzoic acid
- D. Acetaldehyde

91 Which one of the following is common name of Butanoic acid?

A. Butyric acid

- B. Barbaric acid
- C. Iso-butyric acid
- D. Iso-Barbaric acid

92 Oxidative cleavage of alkenes takes place in the presence of _____?

- A. Acidic cold $KMnO_4$
- B. Warm Acidic $KMnO_4$
- C. Warm alkaline $KMnO_4$**
- D. Alkaline cold $KMnO_4$

93 Which one of the following is the formula of stearic acid?

- A. $C_{17}H_{33}COOH$
- B. $C_{17}H_{35}COOH$**
- C. C_7H_3COOH
- D. $C_{15}H_{30}COOH$

94 Acetaldehyde oxidation will lead to formation of _____?

- A. Acetic acid**
- B. Butanoic acid
- C. Propanoic acid
- D. Ester

95 What is the IUPAC name of: $ClCH_2CH_2COOH$?

- A. 3-Chloropropanoic acid**
- B. 2-Chloropropanoic acid
- C. 2-Chloro-1-propanoic acid
- D. Propyl carboxylic acid chloride

96 The compounds having -COOH group are called as _____?

- A. Aldehydes
- B. Ketones
- C. Carboxylic acids**
- D. Alcohols

97 In a carboxylic acid dimer how many H-bonds are present?

- A. Three
- B. Two**
- C. Five
- D. One

98 Polyvinyl acetate is polymer of _____?

- A. Acetyl acetate

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CARBOXYLIC ACIDS

B. Vinyl acetate

C. Chloro acetate

D. Benzyl acetate

99 Which of the following acid solution is used for the seasoning of food?

A. Butyric acid

B. Phthalic acid

C. Lactic acid

D. Acetic acid

100 In aromatic carboxylic acids -COOH group is named as _____?

A. Substituent

B. Parent

C. Benzoic acid

D. Both b and c

101 Rayon is _____?

A. Acetyl chloride

B. Alkene

C. Alkyne

D. Acetic acid

102 When ethyl alcohol is oxidized with potassium dichromate, which product is formed?

A. Acetic acid

B. Butanoic acid

C. Benzoic acid

D. No reaction takes place

103 Which of the following is an example of Monocarboxylic acid?

A. Oxalic acid

B. Methanoic acid

C. Glutaric acid

D. Adipic acid

104 Which of the carboxylic acid in diluted form is used as vinegar?

A. Formic acid

B. acetic acid

C. benzoic acid

D. amino acid

105 Which of the following ester give Jasmine Flavour?

A. Ethyl acetate

B. Octyl Acetate

C. Amyl Butyrate

D. Benzyl Acetate

106 Carboxylic acids turn?

A. Red litmus blue

B. Blue litmus red

C. Neutral to litmus

D. No effect

107 Which one of the following is not an example of fatty acid?

A. Palmitic acid

B. Stearic acid

C. Acetic acid

D. Linolenic acid

108 Acetic acid derived from the word 'Acetum' which means _____?

A. Acetic acid

B. Bitter

C. Citric

D. Vinegar

109 Which of the following are soluble in water?

A. Small alcohols

B. Small carboxylic acids

C. Acetone

D. Butane

110 Which of the following ester give Jasmine Flavour?

A. Ethyl acetate

B. Octyl Acetate

C. Amyl Butyrate

D. Benzyl Acetate

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CARBOXYLIC ACIDS

114 Which of the following causes complete reduction of carboxylic acid into alkanes?

- A. H_2/Ni
- B. Pd/C
- C. HI/P**
- D. $LiAlH_4$

115 By which of the following way acetamide can be prepared?

- A. Hydrolysis of ethyl chloride
- B. Heating methyl cyanide
- C. Heating ammonium acetate**
- D. Heating ethyl acetate

116 In a carboxylic acid dimer, how many oxygens are present in the ring?

- A. 4**
- B. 2
- C. 3
- D. 5

117 Which of the following method is used to prepare acetic acid ?

- A. Distillation
- B. Fermentation**
- C. Dehydration
- D. Ozonolysis

118 In benzene, carboxylic acids exist as_____?

- A. Polymers
- B. Dimers**
- C. Individually
- D. Trimers

119 Which of the following catalyst is used for the preparation of acidic anhydrides ?

- A. $K_2Cr_2O_7$
- B. P_2O_5**
- C. H^+/H_2O
- D. H_2SO_4

120 Which of the following is a carboxylic acid derivative ?

- A. Alcohol
- B. Acetic acid
- C. Acyl halide**
- D. Methyl halide

121 When two carboxylic acids are strongly heated in the presence of P_2O_5 , which product is formed ?

- A. Acid halides
- B. Dimer
- C. Acid anhydride**
- D. None of these

MACROMOLECULE

1 The substance that is attached to the enzyme at specific place and converted into product is called as?

- A. Co-factor
- B. Iso-zyme
- C. Active site
- D. Substrate

2 Which of the following is produced by heating of bones?

- A. Gelatine
- B. Cheese
- C. Albumin
- D. Gelly

3 Urease is present in:

- A. Yeast
- B. Grapes
- C. Soya sauce
- D. Soya bean

4 Casein is used in manufacturing of _____.

- A. Buttons & buckles
- B. Tanning of leather
- C. Gelatin
- D. Bakery goods

5 Albumin is present in _____?

- A. Milk
- B. Eggs
- C. Beans
- D. Muscles

6 Proteins are _____ in structure?

- A. Two dimensional
- B. Three dimensional
- C. Uni-dimensional
- D. None of these

7 Carboxylase are example of which type of enzyme:

- A. Hydrolases
- B. Lyases
- C. Transferases
- D. Ligases

8 Enzymes that catalyze hydrolysis:

- A. Oxidoreductase
- B. Hydrolases
- C. Ligases
- D. Transferases

9 Lactoglobulin a simple protein is found in muscles as well as in _____ too.

- A. Fish
- B. Liver
- C. Brain
- D. Plants

10 On heating egg albumin _____?

- A. Solubilize
- B. Decompose
- C. Over cook
- D. Coagulate

11 Enzymes are _____?

- A. Non-specific in action
- B. Very reactive
- C. Highly specific
- D. Volatile

12 NAD contains which vitamin as cofactor.

- A. B1
- B. B2
- C. C
- D. B3

MACROMOLECULE

13 After digestion proteins change into:

- A. Amino acids
- B. Starch
- C. Glycogen
- D. Lipids

14 In which of the following body part protein is not present?

- A. Skin
- B. Hair
- C. Nails
- D. Bones

15 Nucleoproteins are _____ proteins which transfer hereditary information from one generation to other.

- A. Transport proteins
- B. Structural proteins
- C. Genetic proteins
- D. Regulatory proteins

16 Protein is a polymer of _____?

- A. Nitrogen atoms
- B. Amino acids
- C. Glucose
- D. Nitrogenous base

17 Tetra ethyl addition to petrol is example of:

- A. Positive catalysis
- B. Negative catalysis
- C. Both a & b
- D. None

18 Globulins protein upon hydrolysis yield amino acids or their derivatives, so they belong to which type of protein?

- A. Derived proteins
- B. Compound proteins
- C. Conjugated proteins
- D. Simple proteins

19 Regular coiling & twisting of polypeptide chain caused by H-bonding in between NH & CO occurs in _____.

- A. Primary structure
- B. Secondary structure
- C. Tertiary structure
- D. Quaternary structure

20 The substances which reduce the activity of enzyme action are called as _____?

- A. Reducers
- B. Activators
- C. Promoters
- D. Inhibitors

21 Which enzyme is raised in rickets?

- A. Alkaline phosphatase
- B. LDH-1
- C. Acidic phosphatase
- D. None

22 The specific site at which substrate is attached on the enzyme and converted into product is called as _____?

- A. Reaction site
- B. Active site
- C. Binding site
- D. None of these

23 _____ enzyme catalyses the conversion of hexoses to 6-phosphate derivatives.

- A. Hexokinase
- B. Glucokinase
- C. Fructokinase
- D. Malonic acid

24 Three dimensional folding of polypeptide chain results in formation of _____.

- A. Primary structure
- B. Secondary structure
- C. Tertiary structure
- D. Quaternary structure

MACROMOLECULE

25 Optimum pH of salivary amylase is:

- A. 7-7.5
- B. 6-6.5
- C. 6.4-6.9**
- D. 6.3-6.7

26 Albumin is water _____?

- A. Soluble**
- B. Insoluble
- C. Slightly soluble
- D. Highly insoluble

27 What is the Optimum temperature for working of enzyme in human body?

- A. 40°C
- B. 35°C
- C. 37°C**
- D. 32°C

28 Which of the following causes the inactivation of enzymes _____?

- A. Concentration of substrate
- B. Optimum temperature
- C. Beta radiation**
- D. Optimum pH

29 The enzyme which is used in treatment of cancer in children?

- A. Thrombin
- B. L- asparaginase**
- C. Both
- D. None of these

30 Which enzyme causes the hydrolysis of fats ?

- A. Urease
- B. Lipase**
- C. Maltase
- D. Protease

31 Hemoglobin is example of which protein.

- A. Transport proteins**
- B. Structural proteins
- C. Genetic proteins

D. Regulatory proteins

32 Non protein part which is conjugated with protein is called _____.

- A. Coenzyme
- B. Co-factor
- C. Prosthetic group**
- D. None

33 LDH-1 is raised in which disease:

- A. Rickets
- B. Anemia
- C. Heart disorders**
- D. Stroke

34 Amino acids in proteins are held together by:

- A. Peptide bond**
- B. Phosphodiester linkage
- C. H-bonding
- D. Ether linkage

35 In nature fatty acids occur as _____ of glycerol?

- A. Acid halides
- B. Binary compounds
- C. Esters**
- D. Alkanes

36 Proteases enzyme & peptones belong to which type of protein?

- A. Simple protein
- B. Derived proteins**
- C. Conjugated proteins
- D. All of these

37 Enzymes that catalyze the addition of ammonia, water or carbon dioxide to double bond or their removal are called _____.

- A. Lyases**
- B. Hydrolases
- C. Ligases
- D. Transferases

38 Globulin proteins are found in:

- A. Animals**
- B. Plants
- C. Human beings

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D. None

39 Left handed helix in proteins secondary structure is called as ____?

A. Alpha helix

B. Beta helix

C. Spiral

D. Concentrate

40 Enzymes which bring about exchange of functional group is called ____.

A. Oxidoreductase

B. Hydrolases

C. Ligases

D. Transferases

41 metallic organic molecule & sometimes ____.

A. Vitamins

B. DNA

C. Coenzyme

D. None

42 Activator of phosphatase enzyme is ____.

A. Mn^{2+}

B. Mg^{2+}

C. Zn^{2+}

D. None of these

43 Enzymes speed up the reaction upto:

A. 10^{10}

B. 20^{10}

C. 10^{20}

D. 15^{10}

44 Which enzyme is used for diagnosis of Jaundice ?

A. LDH-1

B. Protease

C. Alkaline phosphatase

D. None of these

45 High molecular mass organic compounds, upon hydrolysis yield amino acids are called ____.

A. Carbohydrates

B. Lipids

C. Proteins

D. DNA

46 Disruption of the protein structure by heating, changing and by chemicals is called as ____?

A. Coagulation

B. Dehydration

C. Denaturation

D. None of these

47 Isoenzymes comes from ____?

A. Same sources

B. Different organisms

C. Same organisms

D. None of these

48 Which of the following element is not usually present in all proteins?

A. Carbon

B. Hydrogen

C. Nitrogen

D. Sulphur

49 Proteases enzyme are example of:

A. Lyases

B. Hydrolases

C. Ligases

D. Transferases

50 The sequence of amino acids combined in a peptide chain is called ____.

A. Primary structure

B. Secondary structure

C. Tertiary structure

D. Quaternary structure

51 On which of the following factors rate of enzyme action is directly proportional ?

A. Concentration of products

B. Time

MACROMOLECULE

C. Concentration of substrate

D. Concentration of solvent

52 Phospho-glyceromutases are example of:

A. Lyases

B. Hydrolases

C. Ligases

D. Transferases

53 Which of the following element is present in all proteins ?

A. S

B. C

C. N

D. O

54 Enzymes are _____ in nature.

A. Proteins

B. Carbohydrates

C. Lipids

D. Nucleic acid

55 A peptide having up to 10000 amino acids is called as _____?

A. Dipeptide

B. Protein

C. Polypeptide

D. Peptide

56 The temperature at which enzyme activity is maximum is called as _____?

A. Maximum temperature

B. Absolute temperature

C. Critical temperature

D. Optimum temperature

57 Enzymes are also called as _____?

A. Catalyst

B. Lipoproteins

C. Conjugated molecules

D. Biocatalyst

58 Dehydrogenase is example of which class of enzyme.

A. Oxidoreductase

B. Hydrolases

C. Ligases

D. Transferases

59 The specific site at which substrate is attached on the enzyme and converted into product is called as _____?

A. Reaction site

B. Active site

C. Binding site

D. None of these

60 Protein component of enzyme is called _____.

A. Coenzyme

B. Cofactor

C. Apo-enzyme

D. Prosthetic group

61 Catalytic activity of enzyme is enhanced by:

A. Activator

B. Coenzyme

C. Co-factor

D. Both A and B

62 Which of the following element is present in all proteins ?

A. S

B. C

C. N

D. O

63 Most abundant protein in animals forming 25%-35% of body protein is which type of protein?

A. Simple proteins

B. Conjugated proteins

C. Derived proteins

D. None

64 Isoenzymes catalyze _____?

A. Catalyze different reaction

B. Catalyze same reaction

C. Catalyze any reaction

D. Catalyze reactions that are from different reactions

65 Activator of carbonic anhydrase enzyme is _____.

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A. Mn^{2+}

B. Mg^{2+}

C. Zn^{2+}

D. None of these

66 The hydrolysis of urea is catalyzed by:

A. Amylase

B. Urease

C. Pectin

D. None

67 Who introduced the concept of macromolecules?

A. Runge

B. Maxwell

C. Staudinger

D. None of these

68 Most of the enzyme reactions are _____?

A. Reversible

B. Irreversible

C. Condensation

D. Oxidation

69 If temperature of reaction medium increases above optimum temperature then _____?

A. It increases the enzyme activity

B. Stops the reaction

C. Decreases the enzyme activity

D. Both b and c

70 _____ enzyme catalyzes the conversion of hexoses to 6-phosphate derivatives.

A. Hexokinase

B. Glucokinase

C. Fructokinase

D. Malonic acid

71 The temperature at which enzyme activity is maximum is called as _____?

A. Maximum temperature

B. Absolute temperature

C. Critical temperature

D. Optimum temperature

72 Masses of enzymes is between _____?

A. Thousands

B. Millions

C. Hundreds

D. Billions

73 The substance that is attached to the enzyme at a specific place and converted into product is called as?

A. Co-factor

B. Iso-zyme

C. Active site

D. Substrate

74 When product formed acts as a catalyst, the phenomenon is called:

A. Biocatalyst

B. Autocatalysis

C. Heterocatalysis

D. Homocatalysis

75 Dehydrogenase is an example of which class of enzyme.

A. Oxidoreductase

B. Hydrolases

C. Ligases

D. Transferases

76 Which enzyme causes the hydrolysis of fats?

A. Urease

B. Lipase

C. Maltase

D. Protease

77 Sucrose is converted into glucose & fructose by:

A. Invertase

B. Urease

C. Glycolysis

D. None

78 Which one of the following is the correct molecular mass of protein?

A. 9000

B. Less than 10000

C. 10000

D. More than 10000

79 Left-handed helix in protein secondary structure is called as _____?

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- A. Alpha helix
- B. Beta helix**
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80 Phosphoglyceromutases are example of:

- A. Lyases**
- B. Hydrolases
- C. Ligases
- D. Transferases

81 The name protein is derived from _____ word proteios meaning_____.

- A. Greek, Important.
- B. French, Prime Importance
- C. Greek, Functional
- D. Greek, Prime Importance**

82 Which enzyme is used for diagnosis of Jaundice ?

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- C. Alkaline phosphatase**
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- B. B2
- C. C
- D. B3**

88 The specific site at which substrate is attached on the enzyme and converted into product is called as_____?

- A. Reaction site
- B. Active site**
- C. Binding site
- D. None of these

89 Non- protein part co- factor includes organic & metallic organic molecule & sometimes_____.

- A. Vitamins**
- B. DNA
- C. Coenzyme
- D. None

90 In a reaction having both alkyl halide and base, the base will attack on _____?

- A. Electrophilic carbon
- B. Nucleophilic carbon
- C. beta-hydrogen**
- D. None of these

91 When a molten salt is electrolyzed the products are

- A. Complex
- B. Predictable**
- C. Unpredictable
- D. All of these

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- C. Apo-enzyme**
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- A. Invertase
- B. Urease
- C. Glycolysis
- D. Zymase**

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- C. Albumin
- D. Gelly

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- B. Grapes
- C. Soya sauce
- D. Soya bean**

111 Casein is used in manufacturing of _____.

- A. Buttons & buckles**
- B. Tanning of leather
- C. Gelatin
- D. Bakery goods

112 Protein part attached with non-protein part in enzymes belongs to which class of proteins?

- A. Simple
- B. Conjugated/compound**
- C. Derived

D. All of these

113 Glucose is converted into ethanol by the _____ enzyme present in yeast.

- A. Invertase
- B. Urease
- C. Glycolysis
- D. Zymase**

114 Fumaric acid is converted into _____ in the presence of fumarase enzyme.

- A. Oxalic acid
- B. Phthalic acid
- C. Maleic acid**
- D. Malonic acid

115 Denaturing of protein is _____ process.

- A. Reversible
- B. Irreversible**
- C. Equilibrium
- D. all of these

116 How many classes of enzymes are there according to International union of Biochemistry ?

- A. Four
- B. Six**
- C. Five
- D. Two

117 Proteins are _____ in structure ?

- A. Two dimensional
- B. Three dimensional**
- C. Uni-dimensional
- D. None of these

118 Carboxylase are example of which type of enzyme:

- A. Hydrolases
- B. Lyases
- C. Transferases
- D. Ligases**

119 Enzymes that catalyze hydrolysis:

- A. Oxidoreductase
- B. Hydrolases**

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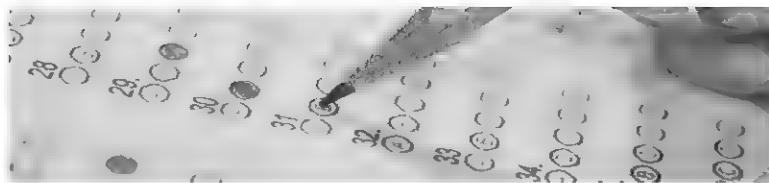
- C. Ligases
- D. Transferases

120 On heating egg albumin_____?

- A. Solubilize
- B. Decompose
- C. Over cook
- D. Coagulate

Chemistry >> Aldehydes

EPPREPARE.PK



BIOLOGY NMDCAT

PMC Practice Tests Data

BIODIVERSITY (ACELLULAR LIFE/VARIETY OF LIFE)

Classification of Viruses

- Q.1** Where can viruses replicate?
A. Animals
C. Bacteria
B. Plants
D. All
- Q.2** These are largest animal viruses:
A. HIV
C. Covid-19
B. Poxviruses
D. HBV
- Q.3** Viruses do not have:
A. Fossil record
C. Reproductive ability
B. Traces in history
D. Nucleic acid
- Q.4** In plants, tumors are induced due to:
A. Bacteria
C. Fungi
B. Virus
D. All of these
- Q.5** Cell theory does not explain:
A. Fungi
C. Algae
B. Virus
D. Protista
- Q.6** Which of the following has no nucleic acid?
A. Bacteria
C. Prions
B. Virus
D. Viroid
- Q.7** It is a biological weapon:
A. Radiation
C. Virus
B. Chemical
D. All of these
- Q.8** Virus transmission is affected by:
A. Biotic factors
C. Physical factors
B. Chemical factors
D. Both A and C
- Q.9** Viruses are _____ entity between living and non-living.
A. Balanced
C. Threshold
B. Transitional
D. None
- Q.10** Virus when attack on unfamiliar organism, it is mutated many times and come as:
A. More virulent and dangerous
C. More transmissible
B. More mutated
D. All of these
- Q.11** Viruses are classified into many groups on the basis of:
A. Nucleic acid
C. Host cell infectivity
B. Capsid symmetry
D. None of these
- Q.12** Viruses use which of the following enzyme for break-down of bacterial cell wall?
A. Lysozyme
C. Protease
B. Lipase
D. Nuclease
- Q.13** Viral proteins and genome in host cell are assembled at:
A. Cytoplasm
C. Cell membrane
B. Cell wall
D. Cell matrix
- Q.14** Virus can bud from:
A. RER
C. Nuclear envelope
B. Golgi complex
D. All of these
- Q.15** _____ refers to removal or breakdown of capsid.
A. Uncoating
C. Integration
B. Assembly
D. Maturation
- Q.16** Which viruses enter the host cell as a whole?
A. Plant virus
C. Animal virus
B. Bacteriophages
D. None

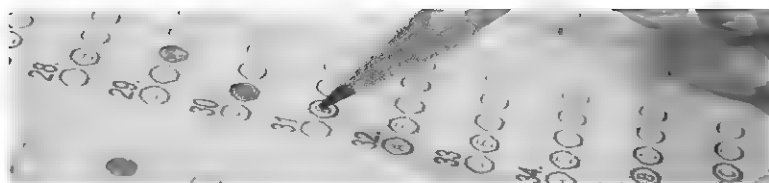


Discovery of Viruses

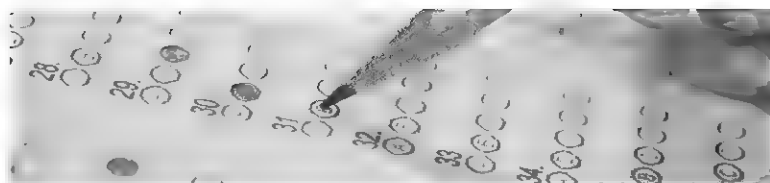
- Q.17** The branch that deals with the study of viruses is known as?
 A. Entomology
 B. Virology
 C. Epidemiology
 D. Bacteriology
- Q.18** Louis Pasteur made vaccines for:
 A. Rabies
 B. Anthrax
 C. Fowl cholera
 D. All of Above
- Q.19** According to Iwanowski what are soluble living germs?
 A. Bacteria
 B. Viruses
 C. Fungi
 D. Both A and B
- Q.20** When was the bacteriophage phenomena rediscovered by D'Herelle?
 A. 1918
 B. 1917
 C. 1920
 D. 1990
- Q.21** When were bacteriophages discovered by Twort?
 A. 1915
 B. 1920
 C. 1910
 D. 1820
- Q.22** Virus that was discovered in 1901:
 A. Yellow fever
 B. Tobacco mosaic
 C. Bacteriophages
 D. Corona
- Q.23** Earliest life form on earth is:
 A. Virion
 B. Viroid
 C. Prion
 D. None

Structure of Viruses

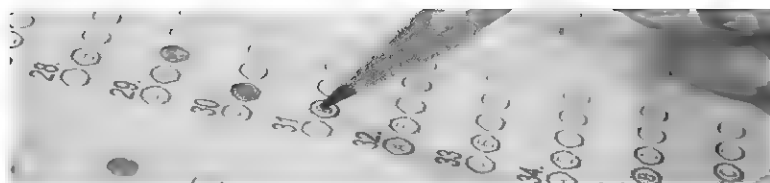
- Q.24** It is very stable and allows viruses to exist in water, air, and the ground:
 A. Nucleoproteins
 B. Nucleocapsid
 C. Tail of virus
 D. None of the above
- Q.25** The complete, mature and infectious particle is known as:
 A. Capsid
 B. Virion
 C. Bacteriophage
 D. Nucleus
- Q.26** Virus is composed of:
 A. Nucleic acid and capsid
 B. RNA only
 C. Genome
 D. Capsid
- Q.27** Protein coat of a virus enclosing nucleic acid is called?
 A. Vector
 B. Capsid
 C. Plasmid
 D. Genome
- Q.28** What molecule would you not expect to find in a retrovirus?
 A. Adenine
 B. Thymine
 C. Uracil
 D. Guanine
- Q.29** What is the size of Parvovirus?
 A. 200nm
 B. 30nm
 C. 20nm
 D. 100nm
- Q.30** The viral DNA or RNA is protected by:
 A. Shell of lipids
 B. Shell of proteins
 C. Shell of carbohydrates
 D. Shell of amino acids
- Q.31** What type of virus is the smallpox virus?
 A. DNA enveloped virus
 B. RNA enveloped virus
 C. DNA virus
 D. RNA enveloped virus
- Q.32** What is the viral nucleocapsid made up of?
 A. Genome and capsid
 B. Capsid and spikes
 C. Envelope and capsid
 D. Capsomere
- Q.33** What types of viruses is the poliovirus?
 A. DNA enveloped virus
 B. RNA enveloped virus
 C. DNA naked virus
 D. RNA naked virus
- Q.34** Herpes simplex are caused by which virus?



- A. Adenovirus
C. Influenza Virus
B. Pox virus
D. Herpes virus
- Q.35 What type of virus is the herpes simplex virus?**
A. DNA enveloped virus
B. RNA enveloped virus
C. DNA virus
D. RNA naked virus
- Q.36 The numbers of capsomeres found in adenovirus capsid is:**
A. 162
C. 252
B. 200
D. 155
- Q.37 The numbers of capsomeres found in herpes virus capsid is:**
A. 162
B. 200
C. 234
D. 155
- Q.38 The genome of the virus includes:**
A. Deoxyribonucleic acid
B. Ribonucleic acid
C. Amino acids
D. Deoxyribonucleic acid or Ribonucleic acids
- Q.39 Viruses without nuclear envelope are called as:**
A. Icosahedral vims
B. Naked virus
C. Enveloped virus
D. Bilayer virus
- Q.40 Which of the following are the main functions of the capsid?**
A. Determines the antigenic specificity of the virus
B. Protects genetic material from nuclease attack
C. Both A and B
D. None of the above
- Q.41 Which of the following statements explains why viruses are only able to multiply in living cells?**
A. Their binary fission is controlled by host cell genes
B. Virus do not possess the necessary components for self-replication
C. DNA is only able to replicate inside living cells
D. They have only enough genetic information for DNA replication
- Q.42 A chemical component that is not found in all viruses is:**
A. Protein
C. Lipids
B. DNA
D. RNA
- Q.43 A common polyhedral capsid shape of viruses is:**
A. Pentagon
C. Icosahedron
B. Cube
D. Pyramid
- Q.44 Identify the true statement about virus:**
A. Viruses were discovered 2 billion years ago
B. Viruses came from outer space
C. Viruses evolved before bacteria
D. Viruses can infect all type of cells
- Q.45 The average diameter of large viruses is approximately:**
A. 100 to 160 nm
B. 100 to 200 nm
C. 100 nm to 360 nm
D. Always below than 100 nm
- Q.46 What are the subunits of capsids?**
A. Capsomeres
B. Flagella
C. Hyphae
D. Septa
- Q.47 Viral envelope is composed of:**
A. Proteins
C. Lipids and proteins
B. Glycoproteins
D. All of the above
- Q.48 It refers to the final changes within an immature virion that result in an infectious virus particle:**
A. Assembly
B. Coating
C. Integration
D. Maturation
- Q.49 All of the following descriptions regarding viral multiplication and nucleic acids are true except that:**



- A. Viruses contain DNA or RNA, not both
B. Viral mRNA, viral tRNA, and viral ribosomes are used in viral replication
C. Viruses replicate only in living cells
D. Viruses use the cell's biosynthetic machinery to synthesize copies of them
- Q.50 Which of the following is not true of a virion?**
A. Reproduce independently B. Contain DNA
C. Contain RNA D. Extracellular
- Q.51 Protein coat of a virus enclosing nucleic acid is called:**
A. Vector **B. Capsid**
C. Plasmid D. Genome
- Q.52 What is the approximate diameter of retroviruses?**
A. 150 nm **B. 100 nm**
C. 200 nm D. 250 nm
- Q.53 When a virus enters a cell and incorporates its RNA or DNA into host DNA, what is this stage called?**
A. Lysogeny B. Fermentation
C. Symbiosis D. Synergism
- Q.54 Phage DNA incorporated into host DNA is referred as:**
A. T₄ phage B. Provirus
C. Prophage D. Bacteriophage
- Q.55 Infectious RNA without capsid:**
A. Virion **B. Viroid**
C. Prion D. Virus
- Q.56 What does the size of virus ranges between?**
A. 100 nm to 150 nm **B. 20 nm to 250 nm**
C. 300 nm to 3000 nm D. 3 nm to 30 nm
- Q.57 Which of the following statement is not true of viruses?**
A. Viruses have been successfully grown in pure cultures in test tubes
B. All viruses are obligate intracellular parasites
C. All viruses have either DNA or RNA as their genetic material
D. Viruses probably arose from small fragments of cellular chromosomes
- Q.58 What is the shape of the TMV?**
A. Rod B. Helical
C. Tadpole D. Spherical
- Q.59 In icosahedral, the capsomeres are arranged in ____ triangles:**
A. 100 B. 200
C. 1000 **D. None of these**
- Q.60 In nucleus the ssDNA viral genome is converted to dsDNA by:**
A. DNA polymerase B. RNA polymerase
C. Cell enzymes D. Proteins
- Q.61 Reverse transcriptase is a useful enzyme to have when:**
A. RNA virus converts its RNA to DNA B. There are no host cells present
C. Nutrients are scarce D. Spikes are forming in the new virus
- Q.62 What is a Provirus?**
A. Free virus B. Free DNA
C. Primitive vims **D. Integrated viral genome**
- Q.63 The function of a viral capsid is?**
A. Protection against the viral genome from physical and enzymatic destruction
B. Providing binding sites that enable the virus to attach to specific receptor sites on the host cell
C. Serving as a vehicle of transmission from one host to another
D. All of the above
- Q.64 Which of the following virus is enveloped?**
A. Adenovirus **B. Herpes virus**
C. Poliovirus D. None of these
- Q.65 Which of the following is not a described type of virus?**



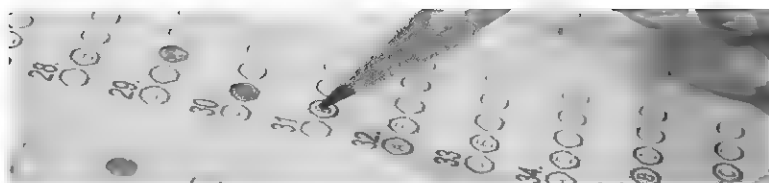
- A. Virus containing double strand DNA
B. Virus containing single strand DNA
C. Virus containing single strand RNA
D. Virus containing single strand RNA and single strand DNA
- Q.66 The size of viruses is usually measured in:**
A. Centimeters
C. Nanometers
B. Micrometers
D. Millimeters
- Q.67 Icosahedral viruses have how many faces?**
A. 20
B. 30
C. 10
D. 40
- Q.68 Virus differ from bacteria by:**
A. Having capsids
B. Having DNA
C. Having RNA
D. Having ribosomes
- Q.69 It is not true about viruses:**
A. Capsid has capsomeres
C. Some are enveloped
B. Both DNA and RNA together as genome
D. Many infect animals
- Q.70 Causative agent of small pox is:**
A. DNA enveloped virus
B. RNA enveloped virus
C. DNA virus
D. RNA naked virus
- Q.71 Which of the following statements are true about the viruses?**
A. Free living
B. Obligate parasites
C. Both A and B
D. None of the above
- Q.72 Which factors may help to determine the antigenicity of a virus?**
A. Capsomeres
B. Size of virus
C. Whole capsid
D. Internal proteins
- Q.73 Which of the following has morphology of a helical virus?**
A. TMV
B. T4 Phage
C. Poxvirus
D. Herpes virus
- Q.74 HBV is:**
A. DNA enveloped virus
B. RNA enveloped virus
C. DNA Virus
D. RNA naked virus
- Q.75 A structure which is located between the nucleocapsid and the envelope:**
B. Matrix protein
A. Capsid
C. Envelop
D. Nucleocapsid
- Q.76 Viroids lacks:**
C. Protective protein coat
A. RNA
B. Enzyme
D. All of these
- Q.77 What type of viruses are the paramyxoviruses?**
B. RNA enveloped virus
A. DNA enveloped virus
C. DNA virus
D. Naked virus
- Q.78 Which of the following viruses possess an envelope?**
A. Herpes virus
B. Reovirus
C. Polio virus
D. Papillomavirus
- Q.79 What does an icosahedral capsid consists of?**
A. Hexagonal capsomeres
B. Pentagonal capsomeres
C. Triangular Capsomeres
D. Both A and B
- Q.80 Viruses are limited in their host range because?**
A. Can only replicate in certain types of cells
B. Certain cells are susceptible to viral infections
C. They can only enter cells that have proper/specific receptors
D. They can only enter cells with glycoproteins
- Q.81 Viruses replicate on their own:**
A. Too small
B. Lack metabolic machinery



- C. Have no cell wall
- Q.82 It is incorrect about virus:**
A. Acellular nature
C. RNA
D. All of these
B. DNA
D. Metabolism
- Viral Disease (For Example AIDS)**
- Q.83 The Long chains of HIV-Proteins is cut down by proteases of:**
A. HIV
C. Both viral and host proteases
D. None of these
B. Host proteases
- Q.84 Whenever a virus encounters an unfamiliar organism, the virus may undergo multiple mutations and emerge as a variant that produces:**
A. Severe and novel disease
C. Non mutated
D. None of these
B. Novel disease
- Q.85 In which year causative agent of AIDS was named?**
A. 1986
C. 1992
D. 1970
B. 1980
- Q.86 The Herpes virus is responsible for which of the following types of Herpes?**
A. Simplex
C. Triplex
D. Duplex
B. Quadruplex
- Q.87 Edward Jenner prepared vaccine against:**
A. Small pox
C. Measles
D. Chicken pox
B. Mumps
- Q.88 Major cell infected by HIV:**
A. T killer lymphocytes
C. T suppressor lymphocytes
D. T memory lymphocytes
B. T helper lymphocytes
- Q.89 Which of the following molecule facilitates the entry of HIV in human body?**
A. Liposomes
C. Polysaccharides
D. Lipopolysaccharides
B. Glycoprotein
- Q.90 Prominent symptoms of AIDS:**
A. Pneumonia
C. Extreme and unexplained tiredness
D. All of these
B. Rapid weight loss
- Q.91 For the synthesis of mRNA, HIV uses:**
A. Viral RNA polymerase
C. Host RNA polymerase
D. None of the above
B. Cytoplasmic RNA polymerase
- Q.92 A person with viral load of HIV 1 if untreated leads to:**
A. Cancer
C. Jaundice
D. AIDS
B. Hepatitis
- Q.93 Which of the following is more virulent?**
A. HIV-2
C. HIV-1
D. HIV-2 (a)
B. HIV-1(a)
- Q.94 There is no vaccine against HIV. What is the possible reason for this?**
A. Virus mutates rapidly
B. Vaccine is very expensive
C. Vaccine can be controlled by change in hygiene
D. None of these
- Q.95 HIV mainly attacks on:**
A. CD₄ site of T cells
C. White blood cells
D. None of these
B. B cells
- Q.96 Chimpanzee has _____ instead of HIV.**
A. SIV
C. HBV
D. HIV-2
B. CIV
- Q.97 AIDS is caused:**
A. Human immunodeficiency virus
C. Influenza Virus
D. Retroviruses
B. Paramyxoviruses
- Q.98 What is meant by HIV-Positive?**
A. A person has AIDS



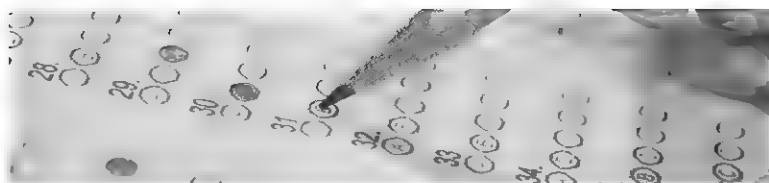
- B. A person having two positive tests for HIV
C. A person can transmit the HIV
D. A person is safe from aids
- Q.99 The replication of the HIV nucleic acid depends on:**
A. Replicase
B. Reverse transcriptase
C. Transcriptase
D. Reverse replicase
- Q.100 Viral genome is integrated into host genome by which of the following enzymes?**
A. Integrase
B. DNA incorporase
C. Reverse transcriptase
D. Protease
- Q.101 Three stages of HIV infection are:**
A. Acute infection → Chronic infection → AIDS
B. AIDS → Acute infection → Chronic infection
C. Chronic infection → AIDS → Acute infection
D. Acute infection → AIDS → Chronic infection
- Q.102 Mumps and Measles are caused by which of the following?**
A. Adenoviruses
B. Pox viruses
C. Influenza viruses
D. Paramyxoviruses
- Q.103 HAV is transmitted by:**
A. Faeces
B. Sexual contact
C. Blood
D. All of these
- Q.104 _____ is usual causative agent of genital herpes.**
A. HSV-1
B. HSV-2
C. Both A and B
D. None of these
- Q.105 When did experimental administration of the HIV virus begin?**
A. 2001
B. 1999
C. 2005
D. 2000
- Q.106 Pigs are reservoir of:**
A. HAV
B. HBV
C. HCV
D. HEV
- Q.107 Which of the following statement correctly describes the tobacco mosaic virus?**
A. RNA virus
B. DNA virus
C. Bacteriophage
D. dsDNA virus
- Q.108 Pox virus is different from all others due to:**
A. Structure
B. Size
C. Nucleic acid
D. All of above
- Q.109 A remarkable feature of pox virus:**
A. Largest in size
B. DNA genome
C. Envelope
D. None of these
- Q.110 It is true about Mumps:**
A. Can affect testes and ovaries
B. Passive immunization is only treatment
C. Vaccine is not available for this
D. Widely spread
- Q.111 Genetically engineered vaccine is available for which of the following hepatitis virus?**
A. HBV
B. HAV
C. HCV
D. Both A and B
- Q.112 Poxvirus has:**
A. Double stranded DNA
B. Single stranded DNA
C. Double stranded RNA
D. Both A and C
- Q.113 For attachment rabies virus bind to:**
A. Complement receptor
B. Integrin ICAM-1
C. Acetylcholine receptor
D. Epidermal growth factor
- Q.114 Where does the AIDS virus infect?**
A. RBCs
B. Platelets
C. Leukocytes
D. None
- Q.115 Which specialized enzyme do retrovirus have?**
A. DNA polymerase
B. Ligase



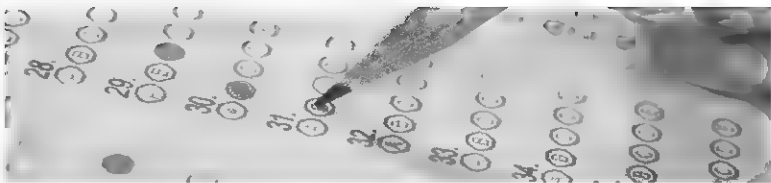
- C. Reverse transcriptase**
- Q.116 Hepatitis D also known as:**
A. Serum hepatitis
C. Bacterial hepatitis
B. Infectious hepatitis
D. Delta hepatitis
- Q.117 How the HIV is transmitted?**
A. Sexual contact
C. Breast feeding
B. Blood
D. All of the above
- Q.118 Which of the following is not a viral disease?**
A. Smallpox
C. Tetanus
B. AIDS
D. Cowpox
- Q.119 Which of the following is not a component of HIV?**
A. RNA
B. Ribosomes
B. Complexity
D. Viability
- Q.120 HIV differs from many viruses because it has high genetic:**
A. Sensitivity
C. Variability
D. Viability
- Q.121 Influenza virus protein HA binds with _____ residues found on the surface of respiratory epithelial cells.**
A. Uncoding protein
C. Antigen P
B. Sialic acid
D. Antigen HI
- Q.122 All are HIV symptoms except:**
A. Sore throat, chills, fever, body aches
C. Cardiac arrest, bloody stools, chills
B. Chills, fever, flu, muscle cramps
D. Rash, fatigue, mouth ulcers
- Q.123 SIV is the abbreviation of:**
A. Simian immunodeficiency virus
C. Siberian immunodeficiency virus
B. Silurian immunodeficiency virus
D. Both A and C
- Q.124 The enzyme which plays important role in HIV pathogenesis:**
A. RNA polymerase I
C. Reverse Transcriptase I
B. DNA polymerase II
D. Reverse Transcriptase
- Q.125 All of the following are the current preventive methods of HIV infection except:**
A. Safe and protected lifestyle
C. Use of available vaccines
B. Use of sterile injections and needles
D. Safe blood transfusion methods
- Q.126 Influenza is caused by:**
A. Adenovirus
C. Influenza Virus
B. Pox virus
D. Herpes virus
- Q.127 This locks the HIV genome into capsid:**
A. Gag protein
C. Pol protein
B. Env protein
D. All of these
- Q.128 The genetically engineered vaccine is not available for which of the following?**
A. HAV
C. HBV
B. HCV
D. HDV
- Q.129 In what year did WHO declare that smallpox was completely eradicated?**
A. 1990
C. 1980
B. 2001
D. 1995
- Q.130 AIDS was firstly reported in which types of individuals?**
A. Heterosexuals
C. Both
B. Homosexuals
D. None
- Q.131 Mad cow disease is caused by which of the following:**
A. Prion
C. Bacteria
B. Virus
D. Both A and B
- Q.132 _____ is associated with a number of tumors in humans:**
A. HSV-2
C. Oncoviruses
B. Varicella-zoster virus
D. Picomavirus
- Q.133 Which virus causes the second major form of hepatitis?**
A. Hepatitis A
C. Hepatitis C
B. Hepatitis B
D. Hepatitis D



- Q.134 Which can convert normal cells into cancer cells?**
 A. Retrovirus B. Adenovirus
 C. Poliovirus D. All
- Q.135 People with chronic hepatitis are at risk of:**
 A. kidney damage B. Liver damage
 C. Heart damage D. Lung damage
- Q.136 Virus for making viral DNA uses whose RNA polymerase:**
 A. Host B. Viral
 C. Encoded by viral genome D. None
- Q.137 Retro viruses are characterized by:**
 A. Lack envelope B. Have no capsid
 C. Reverse transcriptase enzyme D. DNA genome
- Out of Syllabus**
- Q.138 Bacteriophages, or phages are also known as:**
 A. Bacteria facilitator B. Bacteria eater
 C. Animal viruses D. Plant viruses
- Q.139 The bacteriophage incorporates in the viral genome in which phase?**
 A. Lysogenic cycle B. Both
 C. Lytic cycle D. None
- Q.140 How many bacteriophages are formed after 25 minutes of initial infection?**
 A. 250 B. 200
 C. 150 D. 100
- Q.141 What is the first step in the replication of bacteriophage?**
 A. Replication B. Penetration
 C. Attachment D. Injection
- Q.142 Viruses that attack bacteria are called:**
 A. Virophage B. Lysophage
 C. Bacteriophage D. None of the above
- Q.143 Where the double stranded DNA of the bacteriophage is found?**
 A. Tail B. Sheath
 C. Collar D. Head
- Q.144 The phage that causes the lytic cycle is called:**
 A. Virulent phage B. Lytic phage
 C. Temperate phage D. Both A and B
- Q.145 During lytic cycle how many phages are released from infected host cell:**
 A. 100-300 B. 100-500
 C. 100-200 D. 100-400
- Q.146 Bacteriophages have been used widely in genetic research, since they are the smallest and simplest biological entities capable of:**
 A. Self-replication in host cell B. Duplication
 C. Self-duplication D. Multiplication in host cell
- Q.147 Binary fission occurs in which stage of the bacteriophage life cycle?**
 A. Lysogenic cycle B. Lytic cycle
 C. Both A and B D. None
- Q.148 The structure of which bacteriophage resembles a tadpole?**
 A. T₂ B. T₄
 C. Both A and B D. None
- Q.149 These viruses usually occur in two structural forms:**
 A. HIV B. HCV
 C. Bacteriophage D. COVID-19
- Q.150 In which step is lysozyme released by the bacteriophage?**
 A. Attachment B. Penetration
 C. Injection D. Replication
- Q.151 What type of the phage is a T₂ Phage?**
 A. ssDNA Phage B. dsDNA phage



- C. ssRNA Phage
D. ds RNA Phage
- Q.152 Which type of viruses infect *E. coli* bacteria?**
A. T phages
B. P phages
C. Both A and B
D. None
- Q.153 What is the function of lysozyme released by bacteriophages?**
A. Injecting DNA
B. Replication
C. Dissolve bacterial cell wall
D. All of these
- Q.154 Where does the bacteriophage replicate?**
A. Human
B. Horse
C. Bacteria
D. Animal
- Q.155 The phage that causes the lysogenic cycle is?**
A. Virulent phage
B. Lytic phage
C. Temperate phage
D. Both A and B
- Q.156 When the tobacco mosaic virus was successfully crystallized?**
A. 1935
B. 1930
C. 1932
D. 1920
- Q.157 They show complexity:**
A. Influenza virus
B. Herpes virus
C. T₄ virus
D. All of these
- Q.158 Viral DNA, incorporated into bacterial DNA, is called:**
A. T₄ phase
B. Bacteriophage
C. Prophage
D. Lytic phage
- Q.159 What was the correct classification according to Linnaeus?**
A. Similar genera in one family
B. Similar species in one genus
C. Similar families in one order
D. All of above
- Q.160 Pathogens inside body are killed by:**
A. Antibodies
B. Immune system cells
C. Interferon
D. All of these
- Q.161 Binomial nomenclature was introduced by:**
A. C. Linnaeus
B. L. Margulis
C. J. Schleiden
D. R. Whittaker



ANSWER KEY

BIODIVERSITY (ACELLULAR LIFE/VARIETY OF LIFE)

1	D	21	A	41	B	61	A	81	B	101	A	121	B	141	C	161	A
2	B	22	A	42	C	62	D	82	D	102	D	122	C	142	C		
3	A	23	D	43	C	63	D	83	A	103	A	123	A	143	D		
4	D	24	B	44	D	64	B	84	B	104	A	124	D	144	D		
5	B	25	B	45	B	65	D	85	A	105	A	125	C	145	C		
6	C	26	A	46	A	66	C	86	A	106	D	126	C	146	D		
7	C	27	B	47	C	67	A	87	A	107	A	127	A	147	A		
8	D	28	B	48	A	68	A	88	B	108	B	128	B	148	B		
9	B	29	C	49	B	69	B	89	B	109	A	129	C	149	C		
10	D	30	B	50	A	70	A	90	D	110	D	130	B	150	B		
11	B	31	A	51	B	71	B	91	C	111	D	131	A	151	B		
12	A	32	A	52	B	72	A	92	D	112	A	132	C	152	A		
13	A	33	D	53	A	73	A	93	C	113	C	133	B	153	C		
14	D	34	D	54	C	74	A	94	A	114	C	134	A	154	C		
15	A	35	A	55	B	75	B	95	A	115	C	135	B	155	C		
16	C	36	C	56	B	76	C	96	A	116	D	136	A	156	A		
17	B	37	A	57	A	77	B	97	A	117	D	137	C	157	C		
18	D	38	D	58	A	78	A	98	A	118	C	138	B	158	C		
19	B	39	B	59	D	79	A	99	B	119	B	139	A	159	D		
20	B	40	C	60	AA	80	C	100	A	120	C	140	B	160	D		



BIOENERGETICS

Anaerobic respiration (respiration without oxygen)

- Q.1** Fermentation products produced by the yeast are:
 A. $H_2O + CO_2$
 B. Methyl alcohol + CO_2
 C. Methyl alcohol + CO_2
 D. Ethyl alcohol + CO_2
- Q.2** In anaerobic respiration only _____ % of the energy present within the chemical bond of glucose is converted into ATP.
 A. 1
 B. 2
 C. 3
 D. 4
- Q.3** In which of the following component of the body, lactic acid fermentation takes place?
 A. Heart
 B. Brain
 C. Liver
 D. Muscles
- Q.4** In alcoholic fermentation pyruvic acid is broken down into?
 A. Acetaldehyde
 B. Methyl alcohol
 C. Ethyl alcohol
 D. Lactic Acid
- Q.5** Pyruvate is broken down to _____ in yeast.
 A. Acetyl CoA
 B. Alcohol
 C. Lactic acid
 D. All of these
- Q.6** Lactic acid is produced as a result of:
 A. Glycolysis
 B. Anaerobic respiration
 C. Aerobic respiration
 D. ALL A, B, C
- Q.7** Which of the following is not respiration?
 A. Breakdown of glucose
 B. Formation of glucose
 C. Release of energy
 D. Exchange of gases

Electron transport chain

- Q.8** Oxygen plays ____ role in respiration.
 A. It combines with acetyl-CoA at the start of the Krebs cycle
 B. It plays no role
 C. It is given off as a by-product during the oxidation of pyruvates
 D. It is the final electron acceptor at the end of the electron transport chain
- Q.9** What is the product of the ETC in animals?
 A. Oxygen
 B. Carbon dioxide
 C. Water
 D. All of these
- Q.10** Cytochromes are electron transport intermediates containing:
 A. Myoglobin
 B. Haem
 C. Globulin
 D. Fibrin
- Q.11** How does the electron transport system generate ATP?
 A. Symbiosis
 B. Chemiosmosis
 C. Both A and B
 D. None of these
- Q.12** What is the end product of the ETC in animals?
 A. ATP
 B. Carbon dioxide
 C. Water
 D. Both A and C
- Q.13** Final acceptor of electrons in respiratory chain is?
 A. NADH
 B. Cytochrome a_3
 C. Water
 D. Oxygen
- Q.14** Cytochrome a is oxidised by which of the following in ETC?
 A. Carbon dioxide
 B. Oxygen
 C. ATP
 D. Cytochrome a_3
- Q.15** What is the copper containing protein involved in the ETC in plants?
 A. Pq
 B. Pc
 C. Pt
 D. Po
- Q.16** Coenzyme Q is oxidized by which coenzyme?
 A. Coenzyme c
 B. Coenzyme q
 C. Cytochrome b
 D. Cytochrome a



- Q.17** Cytochrome b is reduced by:
A. Cytochrome c
C. NADH
B. Coenzyme Q
D. Cytochrome a
- Q.18** Cancer cells require large amounts of ATP. Which of the following produce high number of ATP?
A. Glycolysis
C. Oxidative phosphorylation
B. Krebs cycle
D. Electron transport chain
- Q.19** Enzymes for oxidative phosphorylation are present on:
A. Cristae
C. Outer compartment
B. Inner compartment
D. Outer membrane
- Q.20** Electrons from NADH accepted by oxygen forms how many ATPs?
A. 2
C. 4
B. 3
D. 1
- Q.21** Electron transport chain occurs in:
A. Inner membrane of mitochondria
B. Outer compartment of mitochondria
C. Thylakoid membrane
D. Both A and C
- Q.22** Terminal carrier of cytochrome complex present in ETC:
A. Q
C. a
B. C
D. None
- Q.23** NADH is oxidized by:
A. Co-enzyme Q
C. Cytochrome c
B. Cytochrome b
D. Cytochrome a

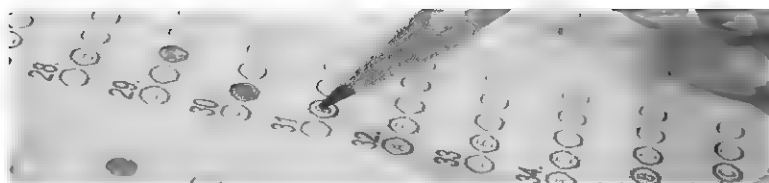
Glycolysis/glycolytic pathway/aerobic respiration

- Q.24** FADH_2 is produced during:
A. Glycolysis
C. Krebs cycle
B. The oxidation of pyruvates
D. All of these
- Q.25** Complete breakdown of glucose molecule takes place in which of the following?
A. Alcoholic fermentation
C. Aerobic respiration
B. Lactic acid fermentation
D. None of these
- Q.26** Glycolysis takes place in:
A. Nucleus
C. Mitochondria
B. Cytosol
D. Ribosomes
- Q.27** Phosphofructokinases enzyme converts fructose-6-phosphate into:
A. Fructose-1, 4-phosphate
C. Bisphosphate
B. Fructose-1,6-bisphosphate
D. Fructose
- Q.28** What is the coenzyme that facilitates the oxidation of fumarate?
A. FAD
C. NAD
B. PADH_2
D. NADPH
- Q.29** Where does the first stage of cellular respiration occur?
A. Cytosol
C. Nucleus
B. Membrane surface
D. All of these
- Q.30** Acetyl CoA completely is oxidized to carbon dioxide and liberate:
A. NADH and FAD
C. ATP
B. NADP and FADP
D. ATP, NADH and FADH_2
- Q.31** Which process can take place in the presence and absence of oxygen?
A. Glycolysis
C. Krebs cycle
B. Pyruvic acid oxidation
D. Electron transport chain
- Q.32** What energy rich organic compound is produced as a result of the Calvin cycle?
A. NADPH
C. ATP
B. CO_2
D. Glucose
- Q.33** Oxaloacetate combines with which molecule to enter the Krebs cycle again?
A. ATP
B. NADPH

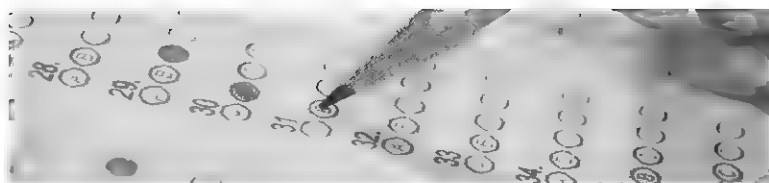


- C. FAD
- Q.34 Hexokinase plays role in:**
A. Krebs cycle
C. Glycolysis
- Q.35 Glucose is converted to _____ before entering Krebs cycle.**
A. Pyruvate
C. Acetyl CoA
- Q.36 Hexokinase is the enzyme found in**
A. Glycolysis and pentose pathway
C. Glycolysis only
- Q.37 Succinate is oxidized and form:**
A. FAD
C. FADH₂
- Q.38 If a molecule is reduced it gains:**
A. Energy
C. Hydrogen protons
D. All of above
- Q.39 ATP synthase is located in the of the mitochondrion:**
A. Intermembrane space
C. Matrix
D. Inner membrane
- Q.40 What is the final product of the Krebs cycle?**
A. Malate
C. Oxaloacetate
B. Succinate
D. Fumarate
- Q.41 From one pyruvate passing through Krebs cycle, how many NADH are formed?**
A. 1
C. 3
B. 2
D. 4
- Q.42 Cellular respiration is essentially what type of process:**
A. Oxidation
C. Redox
B. Reduction
D. None of the above
- Q.43 What are products of respiration in plants?**
A. CO₂ and H₂O
C. C₆H₁₂O₆ and H₂O
B. CO₂, H₂O and ATP
D. None
- Q.44 The pay-off phase of glycolysis conserve:**
A. Molecules of glucose
C. Molecules of fructose
B. ATP
D. water
- Q.45 Fatty acid release considerable amount of energy in oxidation during:**
A. Calvin cycle
C. Dark reaction
B. Krebs cycle
D. Light reactions
- Q.46 How many carbons does citrate have in the Krebs cycle?**
A. 5
C. 8
D. 4
B. 6
- Q.47 What is formed at the end of the preparatory phase of glycolysis?**
A. G₃P
C. Pyruvate
D. Both A and B
B. Dihydroxyacetone phosphate
- Q.48 End product of citric acid cycle:**
A. Pyruvate
C. CO₂
B. CO₂ and H₂O
D. Lactic acid
- Q.49 Oxaloacetate contains how many carbon atoms?**
A. 4
C. 6
B. 5
D. 2
- Q.50 FADH₂ is produced in?**
A. Glycolysis
C. Krebs cycle
B. Pyruvic acid oxidation
D. None
- Q.51 Hans Krebs discovered _____.**
A. Glycolysis
C. Pyruvate oxidation
D. Citric acid cycle
B. Fermentation

Light dependent and light independent phases/reactions



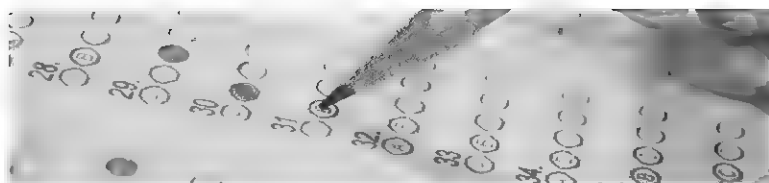
- Q.52** Which of the following organisms have the greatest problem with photorespiration?
A. C_4 plants
C. C_3 plants
B. Heterotrophs
D. CAM plants
- Q.53** In which stage of photosynthesis, ATP and NADPH are converted to ADP+Pi and NADP⁺?
A. Light dependent reaction
C. Both of these
B. Light independent reaction
D. None of above
- Q.54** The stage of photosynthesis that actually produces sugar is _____.
A. Calvin cycle
B. Photosystem I
C. Photosystem II
D. The light reaction
- Q.55** ATP molecules are consumed during which process?
A. Glycolysis
B. Light dependent phase
C. Krebs cycle
D. None
- Q.56** Molecular oxygen is released during:
A. Calvin cycle
C. Krebs cycle
B. Light reactions in photosynthesis
D. Glycolysis
- Q.57** When is sugar formed in photosynthesis?
A. Light independent reactions
B. Light dependent reactions
C. Both A and B
D. None of these
- Q.58** Which one is a light gathering structure?
A. Antenna complex
B. Reaction center
C. Photosystem
D. None of these
- Q.59** Molecular formula of chlorophyll b is:
A. $C_{55}H_{10}O_4N_6Mg$
C. $C_{55}H_{71}O_6N_4Mg$
B. $C_{55}H_{70}O_6N_5Mg$
D. $C_{55}H_{70}O_6N_4Mg$
- Q.60** Light reaction takes place in/on:
A. Chloroplast
C. Thylakoids
B. Stroma
D. Grana
- Q.61** Calvin cycle is:
A. Inhibited by light
C. Independent of light
B. Supported by light
D. Dependent upon light
- Q.62** RuBisCO converts addition of _____ with RUBP to glyceraldehyde 3-phosphate.
A. ATP
C. NADH
B. O_2
D. CO_2
- Q.63** Location of dark reactions in chloroplast:
A. Inner membrane
C. Stroma
B. Grana
D. Thylakoid
- Q.64** How many number of carbon atoms are present in a molecule of RUBISCO?
A. 4
C. 5
B. 6
D. 7
- Q.65** How many carbon atoms are present in Ribulose phosphate?
A. 5
B. 4
C. 6
D. 3
- Q.66** It moves in cyclic manner in cyclic photophosphorylation:
A. Oxygen
C. ATP
B. Electrons
D. NADPH
- Q.67** How many molecule/s of carbon dioxide enter the Calvin cycle to produce one molecule of carbohydrate?
A. 2
B. 3
C. 4
D. 1
- Q.68** Which enzyme is found in the thylakoid membrane that facilitates chemiosmosis?
A. ATP ligase
C. ATP synthase
B. ATP kinase
D. ATP dehydrogenase
- Q.69** Out of the 6 molecules of G_3P , how many molecules are used to make glucose?
A. 1
B. 3
C. 3
D. 4



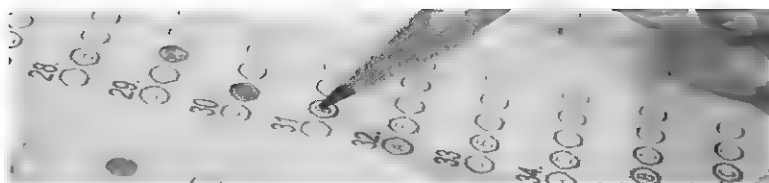
- Q.70** What does ATP provide during photosynthesis?
A. Mechanical energy
C. Chemical energy
B. Physical energy
D. All of these
- Q.71** Which reaction is catalysed by the enzyme RuBisCO?
A. Carboxylation of ribulose biphosphate (RuBP)
B. Conversion of triose phosphate (TP) to ribulose phosphate (RuP)
C. Oxidation of giycerate-3 -phosphate (GP)
D. Reduction of glycerate-3-phosphate (GP)
- Q.72** Enzymes for light-dependent reactions are present in:
A. Outer membrane of the chloroplast
B. Inner membrane of the chloroplast
C. Stroma of the chloroplast
D. Thylakoid membranes of the chloroplast
- Q.73** The water splitting step of photosynthesis is called?
A. Chemiosmosis
C. Photolysis
B. Hydrolysis
D. Photosynthesis
- Q.74** In photosynthesis dark reaction, is called so because:
A. It occurs in dark
B. **It does not require light energy**
C. It cannot occur during daytime
D. It occurs more rapidly at night
- Q.75** How much net gain of G₃P is obtained after one Calvin cycle?
A. 3
B. 6
C. 2
D. 1
- Q.76** Which one of these occur in dark reactions of photosynthesis?
A. Formation of ATP
B. Release of oxygen
C. Release of hydrogen
D. Synthesis of PGAL
- Q.77** The path of electrons through the two photosystems is called?
A. S scheme
B. X scheme
C. Z scheme
D. Y scheme
- Q.78** The G₃P is the end product of:
A. Krebs cycle
B. Calvin cycle
C. Chemiosmosis
D. Electron transport chain
- Q.79** Cooperation of the two photosystems of the chloroplast is required for _____.
A. ATP synthesis
B. Reduction of NADP
C. Cyclic photophosphorylation
D. Oxidation of the reaction center of photosystem I
- Q.80** The part of chloroplast where CO₂ is fixed to manufacture sugar is?
A. Stroma
B. Grana
C. Thylakoid
D. Outer membrane
- Q.81** NADPH₂ provides which of the following?
A. Assimilatory power
B. Energized electron
C. Chemical energy
D. Both A and B
- Q.82** The ATP synthesis in plants during the ETC is called?
A. Photophosphorylation
B. Photolysis
C. Chemiosmosis
D. All of these
- Q.83** Which molecule passes the mitochondrial membrane to begin the Krebs cycle?
A. ATP
B. Acetyl CoA
C. NADH
D. ADP
- Q.84** The most important photosynthetic pigment is:
A. Chlorophyll a
B. Chlorophyll b
C. Xanthophyll
D. Carotenes
- Q.85** For every 3 molecules of carbon dioxide in Calvin cycle how much G₃P is produced?
A. 6
B. 2
C. 4
D. 8
- Q.86** Find out the correct sequence for movement of electrons during the light dependent reaction:
A. p680, p700, water, NADP
B. Water, p700, NADP, p680



- C. p700, p680, NADP, water
Q.87 Photosystem I absorbs maximum wavelength of light?
A. 700
B. 600
C. 750
D. 770
- Q.88** Which two reactions occur during photophosphorylation?
A. ATP is hydrolyzed and NADP is reduced
B. ATP is hydrolyzed and NADPH is oxidized
C. ATP is synthesized and NADP is reduced
D. ATP is synthesized and NADPH is oxidized
- Q.89** Photosystems are located in:
A. Stroma
B. Chloroplast envelope
C. Thylakoid membranes
D. Intergranum
- Q.90** What are the different stages of the Calvin cycle?
A. Carbon fixation
B. RUBP
C. Reduction
D. A and C
- Q.91** Carbon dioxide is fixed in
A. Light reaction
B. Dark reaction
C. Aerobic respiration
D. Anaerobic respiration
- Q.92** The reaction of carbon dioxide and RUBP is catalyzed by?
A. ATP synthase
B. Globulin
C. RuBisCo
D. NADH dehydrogenase
- Q.93** Chlorophylls are found embedded in the _____ membranes.
A. Stroma
B. Grana
C. Thylakoid
D. Intergrana
- Q.94** Which statement correctly outlines some of the main events in photosynthesis?
A. A 5C carbohydrate accepts carbon dioxide and is then reduced by NADPH derived from photosynthesis
B. A 3C carbohydrate is regenerated and reduced by hydrogen molecules derived from photophosphorylation
C. Photolysis uses light to produce reduced NADP and oxygen which are used to reduce a 3C carbohydrate
D. Photolysis produces NADPH and ATP which are used to reduce a 5C carbohydrate
- Oxidative phosphorylation /cyclic and non- cyclic phosphorylation**
- Q.95** Cooperation of the two photosystems of the chloroplast is required for :
A. ATP synthesis
B. Reduction of NADP⁺
C. Cyclic photophosphorylation
D. Oxidation of the reaction center of photosystem I
- Q.96** It is most energy rich compound:
A. FADH₂
B. ATP
C. NADH
D. GTP
- Q.97** The synthesis of ATP in the presence of oxygen is called:
A. Respiration
B. Calvin cycle
C. Oxidative phosphorylation
D. Chemiosmosis
- Q.98** Where does the molecular mechanism of oxidative phosphorylation take place?
A. Cytosol
B. Mitochondria
C. Nucleus
D. All of these
- Photosynthesis**
- Q.99** Photosystem II has molecules which absorbs maximum light of:
A. 680 nm
B. 100 nm
C. 700 nm
D. 670nm
- Q.100** The point at which there is no net exchange of gases between leaves and atmosphere is known as?
A. Neutral point
B. Compensation point
C. Parallel point
D. Competitive point



- Q.101** If more oxygen is present, the RuBisCO starts:
A. Respiration
C. Carboxylase
B. Photorespiration
D. None of these
- Q.102** Which type of light causes the highest rate of photosynthesis?
A. Blue
C. Orange
B. Red
D. Violet
- Q.103** About what % of photosynthesis is carried by terrestrial plants, while rest occurs in ocean, lakes, and ponds
A. 40
C. 20
B. 10
D. 30
- Q.104** Which cells absorb carbon dioxide in leaf?
A. Neutrophil cells
C. Mesophyll cells
B. Basophil cells
D. All of these
- Q.105** Bacteriochlorophylls do not include which of the following?
A. Chlorophyll a
C. Chlorophyll b
B. Chlorophyll c
D. All of these
- Q.106** The part of chlorophyll molecule that is embedded in the core of thylakoid membrane is:
A. Hydrophilic
C. Both of these
B. Hydrophobic
D. None of these
- Q.107** The electrons from Ferredoxin (Fd) to NADP⁺ are transferred by which enzyme?
A. NADP Oxidase
C. ATP synthase
B. NADP reductase
D. Both A and B
- Q.108** Molecular formula of chlorophyll a is?
A. C₅₅ H₁₀ O₄ N₆ Mg
C. C₅₅ H₇₁ O₆ N₄ Mg
B. C₅₅ H₇₀ O₆ N₅ Mg
D. C₅₅ H₇₂ O₅ N₄ Mg
- Q.109** Wavelength of light that is mainly absorbed by the plants:
A. Orange
C. Green
B. Red
D. Both A and B
- Q.110** The first action spectrum was obtained by:
A. T.W Engelmann
C. TW Inws
B. Malleus
D. W Stapes
- Q.111** First action spectrum was obtained by using:
A. Algae
C. Bacteria
B. Fungi
D. Spirogyra
- Q.112** Early organisms used _____ as a source of hydrogen.
A. Water
C. Hydrogen cyanide
B. Hydrogen sulphide
D. Hydrogen potassium permanganate
- Q.113** Water insoluble photosynthetic pigment:
A. Chlorophyll a
C. Carotenoids
B. Chlorophyll b
D. All of these
- Q.114** Photosynthesis is absent in:
A. Seaweeds
C. Purple sulphur bacteria
B. Mushrooms
D. Angiosperms
- Q.115** What is the color of xanthophyll pigment?
A. Yellow
C. Orange
B. Red
D. Blue
- Q.116** Chlorophyll b is found in which organism?
A. Green plants
C. Animals
B. Green algae
D. Both A and
- Q.117** What do two peaks in action spectrum represent?
A. Light absorption
C. Light emission
B. Consumption of carbon dioxide
D. Both A and B
- Q.118** These all are inorganic compounds except:
A. NO₂
B. C₆H₁₂O₆



- C. H_2O D. H_2SO_4
- Q.119** What is generated during noncyclic flow of photosynthesis?
A. ATP B. NADPH
C. Oxygen D. All of these
- Q.120** Which is the correct order of energy transfer from accessory pigments to main photosynthetic pigment?
A. Carotenoids, Chlorophyll a, Chlorophyll b.
B. Chlorophyll b, Carotenoids, Chlorophyll a.
C. Carotenoids, Chlorophyll b, Chlorophyll a.
D. Chlorophyll a, Chlorophyll b, Carotenoids.
- Q.121** What type of plant cells carry out photosynthesis?
A. Sclerenchymatous cells B. Parenchymatous cells
C. Chlorenchymatous cells D. Both B and C
- Q.122** Which chemical reactions occur during the process of photosynthesis?
A. Oxidation B. Reduction
C. Both A and B D. None of these
- Q.123** What is reduced during sugar production in photosynthesis?
A. NADH B. DNA
C. Oxygen D. None of these
- Q.124** Photosynthesis is process in which _____ compounds of carbon and hydrogen are reduced to carbohydrate like (glucose) using light energy.
A. Organic B. Energy poor
C. Energy rich D. Reduced
- Q.125** Magnesium is important for the synthesis of which of the following?
A. Chlorophyll B. Protein synthesis
C. Glucose metabolism D. All of these
- Q.126** Chlorophyll is insoluble in?
A. Carbon tetrachloride B. Carbon chloride
C. Organic Solvents D. None of these
- Q.127** Van Neil's hypothesis about the production of oxygen during photosynthesis was based on the study and investigations on?
A. Bacteria B. Algae
C. Protonema D. Cyanobacteria
- Q.128** Rate of photosynthesis does not depend upon:
A. Quality of light B. Intensity of Light
C. Duration of Light D. Temperature
- Q.129** Quantitative study of energy relationships in biological systems obeys:
A. Bioenergetics B. Laws of thermodynamics
C. Laws of thermochemistry
D. Laws of chemical energetic
- Q.130** The graph that shows relative effectiveness of different wavelengths in photosynthesis is?
A. Actin spectrum B. Action spectrum
C. Absorption spectrum D. Emission spectrum
- Q.131** The percentage of light absorbed by the leaf is:
A. 0.2 B. 0.15
C. 0.05 D. 0.01
- Q.132** Which of the following statement about the head of a chlorophyll molecule is incorrect?
A. It is a porphyrin ring or tetrapyrrole ring structure
B. It is flat, square and light absorbing
C. Composed of carbon and nitrogen atoms with magnesium as central metal ion,
D. It is hydrophobic
- Q.133** What does $NADPH_2$ provide during photosynthesis?
A. Energized electron B. Uncharged electron



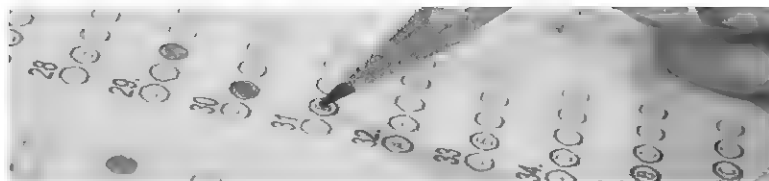
- C. Energy
D. All of these
- Q.134** Carotenoids perform protective function in which of the following organism?
A. Animal
B. Plants
C. Both A and B
D. None of these
- Q.135** Chlorophyll molecule contains which of the following as a central metal ion?
A. Fe^{2+}
B. Zn^{2+}
C. Cu^{2+}
D. Mg^{2+}
- Q.136** In all plants the major sites of photosynthesis are:
A. Leaf
B. Stems
C. Roots
D. Branches
- Q.137** The organisms able to use sunlight directly as a source of energy are:
A. Plants
B. Animals
C. Fungi
D. Omnivores
- Q.138** Which one is not an energy releasing process?
A. Glycolysis
B. Photosynthesis
C. Respiration
D. Krebs cycle
- Q.139** Which pair of areas within a chloroplast will show the steepest pH gradient between them?
A. DNA and stroma
B. Ribosome and stroma
C. Stroma and the space between the outer and inner membrane
D. Stroma and the thylakoid interior space
- Q.140** Excretory products of autotrophic plants:
A. CO_2
B. O_2
C. H_2O
D. All of these
- Q.141** Autotrophs live best in _____ environment:
A. Wet
B. Terrestrial
C. Organic
D. Inorganic

Production of ATP

- Q.142** It is false about ATP:
A. It is a RNA nucleotide
B. It provides energy for cellular reactions
C. It is produced by endoplasmic reticulum
D. All of these
- Q.143** Breaking of terminal phosphate of ATP releases about Kcal of energy?
A. 6.1
B. 6.3
C. 7.1
D. None of these
- Q.144** Primary function of ATP is:
A. Act as catalyst
B. Allosteric modulation of enzymes
C. Energy source
D. To store energy
- Q.145** One of the most important molecules found in living organisms is ATP. What is its major function?
A. Energy source of the cell
B. Coenzyme
C. Cofactor
D. Both A and B
- Q.146** Which one is dollar of the cell?
A. ATP
B. DNA
C. Chromosome
D. Enzyme

Role of light, water, CO_2 /Factors affecting photosynthesis

- Q.147** At which times there is no net gaseous exchange between leaves and the atmosphere?
A. Day
B. Night
C. Dawn and Dusk
D. Midnight
- Q.148** Which of the following is a compensation point?
A. Leaves respire and utilize O_2 and release CO_2
B. Photosynthesis and respiration occur at same rate. So there is not net exchange of gases between atmosphere and plants.



- C. Rate of photosynthesis increases, so do the O_2 production, with a net release of oxygen coupled with the uptake of CO_2 ?
D. Rate of respiration becomes more than rate of photosynthesis. 16 Net yield of H_2O in Photosynthesis is

Q.149 Photosynthetic pigments are organized in form of?

- A. Clusters
B. Stacks
C. Photosystems
D. Both a and b

Out of Syllabus

Q.150 Evolution of pollen tube is parallel to the evolution of which of the following?

- A. Leaf
B. Flower
C. Seed
D. Plant

Q.151 Which cells regulate the opening and closing of the stroma?

- A. Neutrophil cells
B. Guard cells
C. Mesophyll cells
D. Basophil cells

ANSWER KEY

BIOENERGETICS



1	D	21	D	41	C	61	C	81	B	101	B	121	B	141	D
2	B	22	C	42	C	62	D	82	A	102	B	122	C	142	C
3	D	23	A	43	B	63	C	83	B	103	B	123	D	143	D
4	C	24	C	44	B	64	C	84	A	104	C	124	B	144	C
5	B	25	C	45	B	65	A	85	A	105	D	125	A	145	A
6	B	26	B	46	D	66	B	86	D	106	B	126	D	146	A
7	B	27	B	47	D	67	B	87	A	107	B	127	A	147	C
8	D	28	A	48	B	68	C	88	C	108	D	128	A	148	B
9	C	29	A	49	A	69	A	89	C	109	B	129	B	149	C
10	B	30	D	50	C	70	C	90	D	110	A	130	B	150	C
11	B	31	A	51	D	71	A	91	B	111	D	131	D	151	B
12	C	32	D	52	C	72	D	92	C	112	B	132	D		
13	D	33	D	53	B	73	C	93	C	113	D	133	A		
14	D	34	C	54	A	74	B	94	A	114	B	134	C		
15	B	35	A	55	A	75	D	95	B	115	A	135	D		
16	C	36	A	56	B	76	D	96	C	116	D	136	A		
17	B	37	C	57	A	77	C	97	C	117	B	137	A		
18	C	38	D	58	A	78	B	98	B	118	B	138	B		
19	A	39	D	59	D	79	B	99	A	119	D	139	D		
20	B	40	C	60	C	80	A	100	B	120	C	140	B		



BIOLOGICAL MOLECULES

Introduction to biological molecules

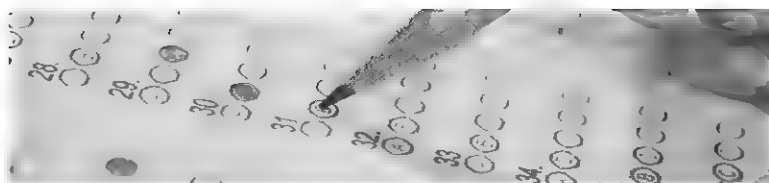
- Q.1** Which of the following is a trace element?
A. Hydrogen
C. Oxygen
B. Copper
D. Carbon
- Q.2** In catabolic reaction _____ free the _____.
A. Fatty acids, polysaccharides
C. Lipids, glucose
B. Proteins, amino acids
D. None of these
- Q.3** Which of the following is a chemical link between catabolism and anabolism?
A. AMP
C. ATP
B. ADP
D. All of these
- Q.4** Which one is the basic element found in all organic compounds?
A. Oxygen
C. Hydrogen
B. Carbon
D. All of these
- Q.5** Interconversion of carbohydrates, proteins and lipids in living cells are an example of:
A. Coordinated catabolic activities
C. Both A and B
B. Coordinated anabolic activities
D. None of these
- Q.6** How are high energy phosphate bonds broken down in ATP?
A. Anabolism
C. Hydrolysis
B. Catabolism
D. All of these
- Q.7** The branch of biology which deals with the study of chemical compounds and the chemical processes in the living organisms is called?
A. Chemistry
C. Biochemistry
B. Molecular Biology
D. Both a and b
- Q.8** Reactions in which simple substances are combined to form complex substances are called?
A. Metabolic reactions
C. Anabolic reactions
B. Catabolic reactions
D. Both B and C

Water

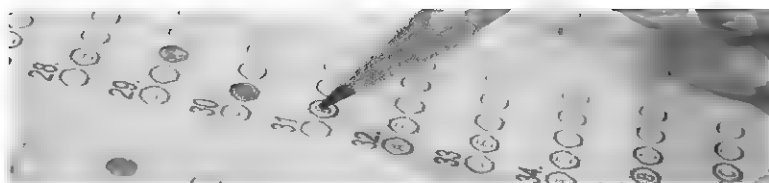
- Q.9** Specific heat of vaporization of water is:
A. 774 Kcal/kg
C. 574 Kcal/kg
B. 874 Kcal/kg
D. 674 Kcal/kg
- Q.10** What percentage of water is found in brain cells?
A. 50
C. 85
B. 80
D. 90
- Q.11** The attraction between water molecules and cell wall of xylem is termed as:
A. Cohesion
C. Adhesion
B. Tension
D. Imbibition
- Q.12** In living organisms, the lubricant which provides protection against damage resulting from friction is?
A. Water
C. Lipids
B. Carbohydrates
D. Proteins
- Q.13** The number of calories required to raise the temperature of 1g of water from 15 to 16 °C is called?
A. Specific Heat of Vaporization
C. Caloric heat
B. Specific heat capacity
D. Both a and b
- Q.14** Liposomes are:
A. Drug carriers
C. Sac of phospholipids
B. Water in middle
D. ALL A, B, C

Carbohydrates

- Q.15** Glycogen is an example of:
A. Phospholipid
B. Polysaccharides



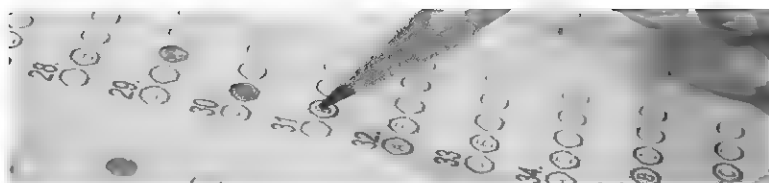
- C. Carbohydrates
D. Both B and C
- Q.16** What percentage of glucose is normally found in human blood?
A. 0.008
B. 0.0008
C. 0.018
D. 0.08
- Q.17** The covalent bond between two monosaccharide subunits is called?
A. Phosphodiester bond
B. Peptide bond
C. Ionic bond
D. Glycosidic bond
- Q.18** Which of following cannot be hydrolyzed?
A. Polysaccharides
B. **Monosaccharides**
C. Oligosaccharides
D. Sucrose
- Q.19** Animal starch is called:
A. Cellulose
B. Agar
C. Glycogen
D. Chitin
- Q.20** It is not a monosaccharide:
A. Fructose
B. Glucose
C. Sucrose
D. All are monosaccharides
- Q.21** Sucrose is present in:
A. **Sugar cane**
B. Milk
C. Almonds
D. None
- Q.22** It is _____ is valuable for diabetic control.
A. **Green vegetable**
B. Grapes
C. Rice
D. All of these
- Q.23** Glycogen is most abundantly present in:
A. Liver
B. Muscles
C. Kidneys
D. Both A and B
- Q.24** Which of the following is soluble in hot water?
A. Starch
B. Glycogen
C. Amylose
D. Amylopectin
- Q.25** Glucose is also called as:
A. **Dextrose**
B. Lymph sugar
C. Grape sugar
D. None
- Q.26** Glycosidic bond is present between:
A. **Monosaccharides**
B. Carbon atoms
C. Amino acids
D. Fatty acids
- Q.27** Which of the following is a trisaccharide?
A. Mannose
B. Galactose
C. Maltose
D. Raffinose
- Q.28** Glycogen on hydrolysis gives:
A. **Glucose**
B. Galactose
C. Fructose
D. Ribose
- Q.29** Cellulose on hydrolysis yields:
A. α D-Glucose
B. α L-Glucose
C. β D-Glucose
D. β L-Glucose
- Q.30** Carbohydrate catabolism is concerned with the fate of:
A. ATP
B. Amino acid
C. Glucose
D. All of these
- Q.31** A complex substance which on hydrolysis yields polyhydroxy aldehyde or ketone subunits is called?
A. Lipid
B. Carbohydrate
C. Protein
D. All of these
- Q.32** Which one gives blue color?
A. Starch
B. Glycogen
C. Cellulose
D. None of these
- Q.33** To synthesis 10g of glucose, how much energy is essentially required?
A. 727 Kcal
B. 712 Kcal



- C. 717 Kcal**
Q.34 Glycogen is present in all body except
A. Brain
C. Blood
Q.35 Alpha 1-4 glycosidic linkage is present in:
A. Maltose
C. Cellulose
Q.36 The 5 carbon sugar present in the heart muscle is:
A. Lyxose
C. Xylose
Q.37 Which is true regarding open chain structure of glucose?
A. There are six asymmetric carbons
C. There are four asymmetric carbon
Q.38 Rarely occurring monosaccharides observed in some bacteria is?
A. Tetroses
C. Pentoses
Q.39 In the molecular formula $C_x(H_2O)_y$, the value of x ranges from?
A. 1000
C. 3 to 7000
Q.40 How many monosaccharide units do oligosaccharides yield upon hydrolysis?
A. 2
C. 10
Q.41 Which one of the following biomolecules is most abundant in animals?
A. Starch
C. Glycogen
Q.42 This is non-reducing sugar:
A. Maltose
C. Cellobiose
Q.43 What type of atom is carbon atom?
A. Divalent
C. Trivalent
Q.44 Which bond provides stability to complex carbohydrate molecule?
A. C—H
C. C—O
Q.45 Which of the following constitute large organic molecules?
A. Cellulose
C. Amino acids
Q.46 These are crystalline, water soluble, forming pyranose rings
A. Monosaccharides
C. Oligosaccharides
Q.47 When the glucose level in blood comes down, glucose is synthesized from _____.
A. Fats
C. Amino acids
Q.48 Which are the most physiologically significant disaccharides?
A. Maltose
C. Lactose
Q.49 Which of the following is the most complex sugar?
A. Monosaccharides
C. Polysaccharides
Q.50 $(CH_2O)_n$ is a general formula of:
A. Monosaccharides
C. Polysaccharides
Q.51 The functional group that best represents ketoses is?
A. CO
C. HCOH
Q.52 Unit of carbohydrate is:
- D. 719 Kcal
B. Heart
D. Tissues
B. Sucrose
D. Cellobiose
B. Ribose
D. Glucose
B. There are five asymmetric carbons
D. There are three asymmetric carbon
B. Hexoses
D. Trioses
B. 2000
D. 3000 and more
B.5
D. All of these
B. Cellulose
D. All of these
B. Sucrose
D. Lactose
B. Monovalent
D. Tetravalent
B. C—N
D. C—C
B. Glucose
D. All of these
B. Polysaccharides
D. Disaccharides
B. Glycogen
D. DNA
B. Sucrose
D. All of these
B. Oligosaccharides
D. Carbohydrates
B. Oligosaccharides
D. Carbohydrates
B. COOH
D. HOH



- A. Monosaccharides
C. Fatty acids
- Q.53** Glycogen is present in all body except:
A. Brain
C. Heart
B. Amino acids
D. All
- Q.54** The smallest monosaccharide is:
A. Triose
C. Tetrose
B. Tissues
D. Blood
- Q.55** Ribose is a monosaccharide constituent of many _____.
A. Enzymes
C. Vitamins
B. Coenzymes
D. Antibiotic
- Proteins**
- Q.56** This amino acid not found in proteins is
A. Beta alanine
C. Tyrosine
B. Glutamine
D. Histidine
- Q.57** The high content of which amino acid confers resistance, stability and insolubility to hairs, nails and skin:
A. Glycine
C. Methionine
B. Alanine
D. Cysteine
- Q.58** Which structure of protein gives information about the folding of a protein?
A. Primary structure
C. Secondary structure
B. Tertiary structure
D. Quaternary structure
- Q.59** The protein contains bonds:
A. Inorganic bonds
C. Glycosidic bonds
B. Peptide bonds
D. Covalent bonds
- Q.60** Protein constitutes of what percentage of the total dry weight found in cells?
A. 50
C. 40
B. 55
D. 65
- Q.61** Which structural organization is most common in globular proteins?
A. Primary structure
C. Tertiary structure
B. Secondary structure
D. Quaternary structure
- Q.62** An enzyme containing 2 chains of polypeptide has:
A. Primary structure
B. Primary and secondary structure
C. Primary, secondary, tertiary and quaternary structure
D. It has all structures
- Q.63** Word Protein is derived from:
A. Latin
C. Roman
B. Greek
D. English
- Q.64** Keratinized epithelium is present in:
A. Hair
C. Bone
B. Skin
D. Muscle
- Q.65** Which of the molecules is formed by peptide bond?
A. Ammonia
C. Water
B. Iron
D. None of the above
- Q.66** Which of the following is not an amino acid?
A. Histidine
C. Glutamic acid
B. Lactic acid
D. Glycine
- Q.67** What are the distinguishing features of fibrous proteins?
A. Elastic
C. Disorganized
B. Non-crystalline
D. Both A and B
- Q.68** Avidin is a protein that:
A. Binds egg white with biotin
C. Both A and B
B. Binds egg white with egg albumin
D. This protein do not belong to egg white



- Q.69** The molecular basis of sickle cell anemia was found by:
A. F. Sanger
C. Tatum
B. Beadle
D. Ingram
- Q.70** What are the main distinguishing features of globular proteins?
A. Crystalline
C. Functional
B. Elastic
D. Both A and C
- Q.71** Antibodies play important role against microorganisms and other pathogens to which type of proteins do they belong?
A. Globular
C. Fibrous
B. Functional
D. Both A and B
- Q.72** Proteins are the polymers of?
A. Amino acids
C. Nucleotides
B. Fatty acids
D. None of these
- Q.73** What type of protein is Fibrin?
A. Functional
C. Enzymatic
B. Structural
D. All of these
- Q.74** The total number of amino acids that have been found in tissues and cells are?
A. 250
C. 20
B. 200
D. 170
- Q.75** What are the distinguishing features of fibrous proteins?
A. Non-crystalline
C. Disorganized
B. Elastic
D. Both A and B
- Q.76** An insulin molecule is made up of how many polypeptide chains?
A. 1
C. 3
B. 2
D. 4
- Q.77** It is protein in nature:
A. Fats /cholesterol
C. Glycogen
B. ATP
D. Ligase
- Q.78** In glycine, R group of amino acids is replaced by?
A. COOH
C. CH₂
B. CH₂
D. None of these
- Q.79** What type of bonding in proteins maintains the integrity of the helical secondary structure?
A. Hydrogen bonds
C. Disulfide linkages
B. Ionic bonds
D. Both A and B
- Q.80** How many bond/s are in a dipeptide?
A. 1
C. 2
B. 3
D. 4
- Q.81** Vegetative source of protein:
A. Egg
C. Pulses
B. Soyabean
D. Both B and C
- Q.82** Which structure of protein gives information about number and sequence of amino acids?
A. Primary structure
C. Tertiary structure
B. Secondary structure
D. Quaternary structure
- Q.83** Globular structure of protein is due to:
A. Primary structure
C. Tertiary structure
B. Secondary structure
D. Quaternary structure
- Q.84** Most abundant protein in blood:
A. Collagen
C. Actin
B. Hemoglobin
D. Rubisco
- Q.85** Abundant protein in human body:
A. Rubisco
C. Cellulose
B. Collagen
D. Albumin
- Q.86** Coagulated protein is:



- A. Insoluble
C. Nonfunctional
- Q.87** How many types of amino acids form proteins in human body?
A. 25
C. 20
B. 70
D. 400
- Q.88** Proteins are polymers of:
A. Amino acids
C. Nucleotides
B. Fatty acids
D. None of these
- Q.89** Number of essential amino acids is?
A. 10
C. 9
B. 20
D. 110
- Q.90** Which of the following is important secondary structure in proteins?
A. α -helix
C. β -pleated sheet parallel
B. β -pleated sheet
D. Both A and B
- Q.91** Enzymes that are integral part of ribosomes are involved in the synthesis of which of the following molecules?
A. Lipids
C. Carbohydrates
B. Protein
D. All of these
- Lipids**
- Q.92** A fatty acid is composed of _____.
A. Acid group at one end
C. Amino group at one end
B. Acid groups at both ends
D. Amino group at both ends
- Q.93** A compound produced as a result of a chemical reaction of an alcohol with an acid in which water molecule is released is called?
A. Monosaccharide
C. Nucleic acid
B. Fatty acid
D. Neutral lipid
- Q.94** Serine is a component of:
A. Lipid
C. Phospholipid
B. Haemoglobin
D. Waxes
- Q.95** Choline is component of:
A. Phospholipids
C. Terpenoids
B. Phosphatidic acid
D. Waxes
- Q.96** Sterols are:
A. Lipid
C. Carbohydrates
B. Protein
D. All of these
- Q.97** Steroid are naturally:
A. Lipoproteins
C. Lipids
B. Proteins
D. A and B
- Q.98** These are properties of lipids:
A. Insoluble in water and soluble in fat solvent.
B. High energy content
C. Structural component of cell membrane
D. All of these
- Q.99** Fatty acids containing 18 C atoms and a single double bond are?
A. Saturated
C. Oleic acid
B. Unsaturated
D. Palmitic acid
- Q.100** Which of the following is a phospholipid?
A. Sterol
C. Lecithin
B. Cholesterol
D. Steroid
- Q.101** Lipids show solubility in which of the following solvents?
A. Water
C. Inorganic solvents
B. Ether
D. All solvents
- Q.102** Lipids have great functional significance in the human body. What are the main functions of the lipids?
A. Energy source
B. Structure of membrane



- C. Mechanical protection
- Q.103 Lecithin contains _____.
A. Ethanolamine
C. Serine**
- Q.104 Hydrophilic substances are _____ and hydrophobic substances are _____.
A. Water loving, Water fearing
C. Soluble in water, Soluble in lipid**
- Q.105 A triglyceride is:
A. Protein
C. A simple sugar**
- Q.106 Nitrogenous bases such as choline and serine are significant part of which of the following?
A. Sphingolipids
C. Phosphodiester**
- Q.107 Saponification number describes _____.
A. Unsaturation in fat
C. Acetyl number**
- Q.108 Lipids show solubility in which of the following solvents?
A. Water
C. Inorganic solvents**
- Q.109 Essential fatty acids show all the characters except _____.
A. Lipotropism
C. Used for energy production**
- Q.110 Fatty acid contains:
A. Alcohol and esters
C. Carboxylic group and isoprenoid**
- Q.111 In water, hydrophobic interactions of phospholipids are:
A. In heads
C. Both A and B**
- Q.112 Liposomes are:
A. Vesicles
C. Drug carrier**
- Q.113 Glycerol is component of:
A. Fatty acids
C. Phospholipids**
- Q.114 Oils are:
A. Saturated fatty acids
C. Glycerides with unsaturated fatty acids**
- Q.115 In contrast to eukaryotic mRNA, prokaryotic mRNA:
A. Can be polycistronic
C. Can only be monocistronic**
- Q.116 A sample of RNA is sequenced and found to contain 22% adenine. Which of the following conclusions can also be drawn about the sample?
A. 22% uracil
C. 22% cytosine**
- Q.117 For a protein molecule of 2000 amino acids, the mRNA will have a length of how many nucleotides?
A. 3000
C. 6000**
- Q.118 Most abundant intracellular free nucleotide is:
A. UTP
C. NAD**
- Q.119 RNA does not contain:
A. Adenine**
- D. All of these**
- B. Choline**
- D. Betaine**
- B. Polar, Non-polar**
- D. All are correct**
- B. Nucleic acid**
- D. Lipid**
- B. Phospholipids**
- D. none of these**
- B. Average molecular weight of fatty acid**
- D. Acid number**
- B. Ether**
- D. All solvents**
- B. Blood clotting factors**
- D. None of these**
- B. Carboxylic and alkyl groups**
- D. Phospholipids and alkyl groups**
- B. In tails**
- D. None**
- B. Have water**
- D. All of the above**
- B. Acylglycerols**
- D. Both B and C**
- B. Unsaturated fatty acids**
- D. Glycerides with saturated fatty acids**

RNA

- B. Is synthesized with introns**
- D. Has a poly A tail**
- B. 22% thymine**
- D. 22% guanine**
- B. 2000**
- D. 5000**
- B. FAD**
- D. ATP**
- B. Hydroxy methyl cytosine**



C. Phosphate

D. Thymine

Conjugated molecules (glycolipids, glycoproteins)

Q.120 Lipoproteins rich in cholesterol are:

A. Chylomicrons

B. VLDL

C. LDL

D. HDL

Q.121 HDL is synthesized in:

A. Adipose tissue

B. Liver

C. Intestine

D. Liver and intestine

Q.122 Which of the following statement is not true for compounds like glycoprotein and glycolipids?

A. They are conjugated molecules of carbohydrates

B. Both have role in the extracellular matrix of animals

C. They are components of biological membranes.

D. Both are produced and secreted by endoplasmic reticulum

Q.123 The basic framework structure of all types of membranes are:

A. Glycolipids

B. Glycoproteins

C. Lipoproteins

D. Nucleoproteins

Q.124 Glycosphingolipid are made up of

A. Sphingolipids

B. Alcohol and fatty acids

C. Carbohydrate and sphingolipids

D. Carbohydrates and fatty acids

Out of syllabus

Q.125 The oldest mineral discovered so far is which of the following, which dates back to 4.4 billion years:

A. Iron

B. Cadmium

C. Diamond

D. Zircon

Q.126 Which of the following makes protective coatings around the plant organs

A. Lipids

B. Waxes

C. Glycerols

D. Glycolipids

Q.127 Which of the following is a water-soluble vitamin?

A. Riboflavin

B. Vitamin c

C. Niacin

D. All of these

Q.128 In DNA molecules, Adenine pairs with which of the following nucleic acid bases?

A. Guanine

B. Thymine

C. Cytosine

D. Uracil

Q.129 Nontoxic vitamins include which of the following?

A. Vitamin c

B. Vitamin b

C. Both A and B

D. None of the above

Q.130 Reactions in which simple substances are combined to form complex substances are called:

A. Metabolic reactions

B. Catabolic reactions

C. Anabolic reactions

D. None of these

Q.131 Which of the following is water soluble vitamin?

A. A

B. B

C. D

D. K

Q.132 The number of water-soluble vitamins is:

A. 3

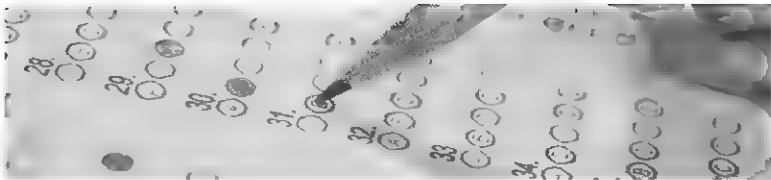
B. 6

C. 9

D. 12

ANSWER KEY

BIOLOGICAL MOLECULES



1	B	21	A	41	C	61	C	81	D	101	D	121	A
2	B	22	A	42	B	62	C	82	A	102	D	122	D
3	C	23	D	43	D	63	B	83	C	103	B	123	C
4	D	24	C	44	C	64	B	84	B	104	D	124	C
5	C	25	A	45	A	65	D	85	B	105	D	125	D
6	C	26	A	46	A	66	B	86	D	106	B	126	B
7	C	27	D	47	B	67	D	87	C	107	D	127	D
8	C	28	A	48	D	68	A	88	A	108	B	128	B
9	C	29	C	49	C	69	D	89	C	109	B	129	C
10	C	30	C	50	A	70	D	90	D	110	B	130	C
11	C	31	B	51	A	71	D	91	B	111	B	131	B
12	A	32	A	52	A	72	A	92	A	112	D	132	D
13	B	33	C	53	D	73	B	93	D	113	D		
14	D	34	C	54	A	74	D	94	C	114	B		
15	B	35	A	55	B	75	D	95	A	115	A		
16	D	36	A	56	A	76	B	96	A	116	A		
17	D	37	C	57	D	77	D	97	C	117	C		
18	B	38	A	58	B	78	D	98	D	118	D		
19	C	39	C	59	B	79	A	99	C	119	D		
20	C	40	D	60	A	80	A	100	C	120	C		



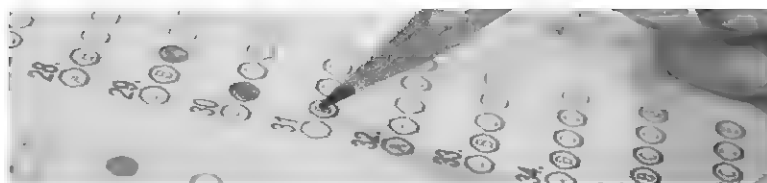
CELL STRUCTURE AND FUNCTION

Cell wall

- Q.1** Cellulose is the major component of?
A. Primary wall B. Secondary wall
 C. Middle lamella D. All of these
- Q.2** The outermost layer in a typical plant cell would be _____.
A. Primary cell wall B. Secondary cell wall
 C. Middle lamellae D. Cell surface membrane
- Q.3** A plant cell wall is mainly composed of which of the following?
 A. Protein B. Starch
C. Cellulose D. Lipid
- Q.4** The first layer of cell wall which is formed is called?
 A. Primary wall B. Secondary wall
C. Middle lamella D. All of these
- Q.5** Secondary cell wall of sclerenchyma cells is impregnated with?
 A. Cellulose **B. Lignin**
 C. Murein D. Pectin
- Q.6** The cementing material between adjacent plant cells.
 A. Cellulose B. Hemicellulose
C. Middle lamella D. All of the above
- Q.7** Which of the following is non-living component of plant cell?
 A. Nucleus **B. Cell wall**
 C. Cell membrane D. All of these
- Q.8** Cell wall of fungi contains:
 A. Cellulose **B. Chitin**
 C. Peptidoglycan D. Glycogen
- Q.9** Components of secondary cell wall:
 A. Cellulose, hemicellulose, pectin **B. Cellulose, hemicellulose, lignin**
 C. Cellulose only D. Magnesium and calcium salts and pectin
- Q.10** Cell wall is secreted by:
 A. Cell membrane B. Vacuole
 C. Cytoplasm **D. Protoplast**
- Q.11** A cell without cell wall is termed as:
 A. Tonoplast **B. Protoplast**
 C. Symplast D. Epiblast
- Q.12** Rectangular shape of plant cells is due to:
A. Cell wall B. Cell membrane
 C. Vacuole D. Cytoskeleton
- Q.13** Which has high affinity for water?
 A. Lignin **B. Cellulose**
 C. All of them D. None of these

Cytoplasm and cell organelles

- Q.14** Ribosomes combined with mRNA are called?
 A. Lysosome B. Nucleosome
C. Polysome D. Polysomic
- Q.15** Ribonucleoprotein particle are the name of?
 A. RNA B. DNA
 C. Nucleus **D. Eukaryotic ribosomes**
- Q.16** If 3 ribosomes attach to single mRNA at different points then how many similar proteins will form?
A. 1 B. 2
 C. 3 D. No similar protein
- Q.17** What is the approximate ratio of RNA and protein in a ribosome?
A. 1:1 B. 2:1



- C. 1:2
D. 1:3
- Q.18** Ribosomes are chemically composed of which of the following?
A. Protein
B. DNA
C. RNA
D. Both A and C
- Q.19** It helps in attachment of two ribosomal units:
A. Calcium ions
B. Magnesium ions
C. Chloride ions
D. Sodium ions
- Q.20** Which of the following organelles is not bound by a membrane?
A. Ribosomes
B. ER
C. Mitochondria
D. Nucleus
- Q.21** 60S and 40S subunit combine to form what size particle?
A. 80S
B. 90S
C. 100S
D. 110S
- Q.22** Which of the following is synthesized by free floating ribosomes of cytoplasm in humans?
A. DNA polymerase
B. Salivary amylase
C. Pancreatic amylase
D. Salivary lipase
- Q.23** The soluble part of the cytoplasm is known as?
A. Cytosol
B. Polysomes
C. Cisternae
D. Chitin
- Q.24** Enzymes that are integral part of ribosomes are involved in the synthesis of which of the following molecules?
A. Lipids
B. Proteins
C. Carbohydrates
D. All of these

Nucleus

- Q.25** _____ is the heaviest particulate of the cell.
A. Golgi apparatus
B. Cytoplasm
C. Mitochondria
D. Nucleus
- Q.26** Which of the following cells do not possess a nucleus?
A. Sieve tube cells
B. Bacteria
C. Red blood cells
D. All of the above
- Q.27** An animal has 80 chromosomes in its gametes, how many chromosomes will be seen in the animal's muscle cells?
A. 120
B. 240
C. 40
D. 160
- Q.28** The number of nuclear pores is highly variable in eukaryotic cells because of?
A. Cell size
B. Number of chromosomes
C. Size of the nucleus
D. Maturation
- Q.29** Which statement about the nucleolus is not true?
A. No membranous boundary
B. Composed of two regions
C. Site of synthesis for rRNA
D. Hereditary centre
- Q.30** If an organism has a diploid number of 36, what is its haploid number?
A. 12
B. 9
C. 18
D. 22
- Q.31** The 23rd pair of chromosomes in man is:
A. Polymorphic
B. Heteromorphic
C. Homomorphic
D. Automorphic
- Q.32** Which of the following cell structure contains the highest concentration of RNA?
A. Centriole
B. Mitochondria
C. Nucleolus
D. Nucleus
- Q.33** All chromosomes other than sex chromosomes are called:
A. Autosomes
B. Allosomes
C. Microsomes
D. None of them



Q.34 Somatic cells of humans have how many pairs of chromosomes in total?

- A. 10
C. 24
B. 23
D. 48

Q.35 _____ is responsible for making ribosomal RNS (rRNA)

- A. Nucleus only
C. Nucleolus only
B. Nucleus & nucleolus only
D. None of above

Q.36 The soluble sap of the nucleus in a plant cell is called?

- A. Cytoplasm
B. Protoplasm
C. [REDACTED]
D. Protoplast

Q.37 Factory of ribosomal synthesis is?

- A. Cytoplasm
C. [REDACTED]
B. Nucleus
D. Endoplasmic reticulum

Q.38 Double membranous organelle having pores:

- A. Chloroplast
C. Nucleus
B. Mitochondria
D. Cell membrane

Endoplasmic reticulum

Q.39 Which of the following is not a function of Smooth Endoplasmic Reticulum (SER)?

- A. Synthesis of steroid hormones from cholesterol.
B. Detoxification of harmful drugs.
C. Synthesis of phospholipids for plasma membrane.
D. Synthesis of membrane proteins

Q.40 Which of the following is a mesh of interconnected membranes involved in protein synthesis and transport?

- A. ER**
C. Golgi apparatus
B. Cytoskeleton
D. All of these

Q.41 Which of the following is false about the sarcoplasmic reticulum?

- A. The sarcoplasmic reticulum is a specialized smooth endoplasmic reticulum
B. The sarcoplasmic reticulum releases calcium ions into the cytoplasm of the muscle cell
C. A change in membrane potential causes the sarcoplasmic reticulum to become more permeable to calcium ions
D. The sarcoplasmic reticulum is found

Q.42 Cytoplasmic streaming movement causes flow of all of the following except?

- A. Glucose and salts
C. Golgi
B. Mitochondria
D. RER

Q.43 Which one of the following is involved in lipid metabolism?

- A. RER
C. Chloroplast
B. Golgi apparatus
D. None

Q.44 Sarcoplasm is different form cytoplasm:

- A. It contains sarcoplasmic reticulum
B. It contains glycogen
C. It contains glycogen and oxygen binding protein, myoglobin
D. All of these

Q.45 _____ are storage bodies for intracellular calcium.

- A. RER
C. Vacuoles
B. SER
D. Golgi complex

Q.46 Smooth endoplasmic reticulum is not involved in:

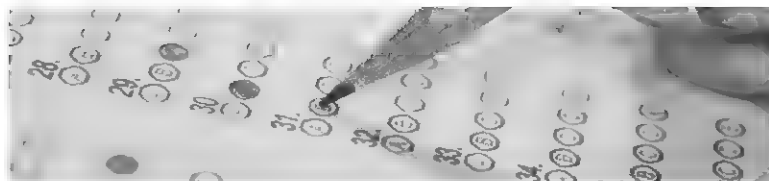
- A. Hormone secretion
C. Conversion of mRNA to amino acids
B. Detoxification
D. Lipoproteins and glycoproteins formation

Q.47 Which of the following is not the function of endoplasmic reticulum?

- A. Transport of material
C. Synthesis of conjugated molecules
B. Mechanical support
D. All of theses

Q.48 Function of Smooth Endoplasmic Reticulum (SER) is _____.

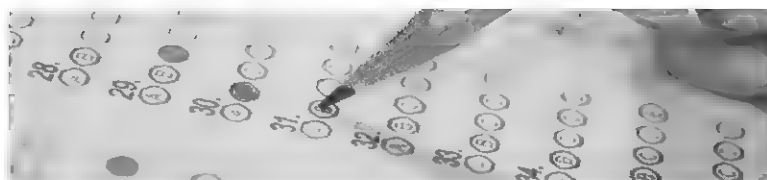
- A. Synthesis of intracellular proteins.
C. Synthesis of extracellular enzymes.
B. Synthesis of lipids.
D. Synthesis of extracellular proteins



- Q.49** Spherical or tubular membranes which separate the material present in endoplasmic reticulum from that of cytoplasmic material are called?
A. Cytosol
C. Lysosomes
B. Cisternae
D. Cristae
- Q.50** Which of the following is not the function of endoplasmic reticulum?
A. Transport of material
C. Synthesis of conjugated molecules
B. Mechanical support
D. All of these
- Q.51** Network of tubules continuous with nuclear membrane:
A. RER
C. Both A and B
B. SER
D. None
- Q.52** If a radioactive amino acid is given to an organism, the organelle that shows radioactivity very first time:
A. Golgi complex
C. Nucleus
B. Mitochondria
D. RER
- Q.53** Sarcoplasmic reticulum cells are those cells that contain:
A. SER less
C. RER less
B. SER more
D. RER more
- Q.54** _____ extend from nucleus and touch cell membrane.
A. SER
C. Gogli apparatus
B. RER
D. Both A and B
- Q.55** It is not found in composition of ER:
A. Carbohydrates
C. Proteins
B. Lipids
D. DNA
- Q.56** Which of the following is not a function of SER?
A. Synthesis of steroid hormones of cholesterol
B. Detoxification of harmful drugs
C. Synthesis of phospholipids for plasma membrane
D. Synthesis of membrane proteins

Mitochondria

- Q.57** ADP is regenerated by mitochondria into which of the following?
A. AMP
C. ADP
B. ATP
D. All of these
- Q.58** Which of the following is not present in mitochondria?
A. Enzymes
C. Ribosomes
B. Coenzymes
D. Thylakoid
- Q.59** The outer and inner membranes of mitochondria are?
A. Structurally and functionally different
B. Structurally different but functionally similar
C. Structurally and functionally similar
D. Structurally similar but functionally different
- Q.60** Which of the following is not a character of mitochondria?
A. It contains F 1 particles
C. is a self-replicating organelle
B. It is double membranous
D. Number of mitochondria is constant
- Q.61** Inner membrane convulsions of the mitochondria are called?
A. Grana
C. Thylakoid membrane
B. Cnstaе
D. Intergrana
- Q.62** Diameter of mitochondria ranges between:
A. 0.5-1 μm
C. 100-200 μm
B. 0.5-1 nm
D. 100-200 nm
- Q.63** It is a true statement:
A. A lot of mitochondria are present in axons
B. Less number of mitochondria are present in axons
C. A lot of mitochondria are present in dendrites
D. A lot of mitochondria are present in dendron
- Q.64** Enzymes in mitochondrial matrix help in which of the following metabolic processes?



- A. Krebs cycle
C. Fatty acid metabolism
- Q.65** _____ plays role in respiration.
A. Mitochondria
C. Ribosome
- Q.66** Which of the following combination is an example of self-replicating organelles?
A. Mitochondria and Ribosomes
C. Mitochondria and Vacuole
B. Mitochondria and Chloroplast
D. Mitochondria and Nucleus
- Q.67** Which of the following is double membranous organelle?
A. Nucleus
C. Chloroplast
B. Mitochondria
D. All A, B, C
- Q.68** F₁ particles are present in:
A. Chloroplast
C. Ribosome
B. Mitochondria
D. All of these

Golgi apparatus/Golgi complex /Golgi bodies

- Q.69** Golgi complex was discovered by which scientist?
A. Robert Brown
C. De Duve
B. Camillo Golgi
D. Robert Hooke
- Q.70** Proteins and lipids are converted into glycolipids and glycoproteins by adding carbohydrates by?
A. Ribosomes
C. Golgi apparatus
B. Cytoplasm
D. Endoplasmic reticulum
- Q.71** Golgi complex is responsible for the formation of secretory granules in _____ cell.
A. Stomach
C. Pancreatic
B. Liver
D. Muscle
- Q.72** Pancreas produces secretory granules that help in digestion. These granules after passing through endoplasmic reticulum are pinched off from the surface of Golgi apparatus?
A. Forming phase
C. Any of these
B. Maturing phase
D. None of these
- Q.73** Shape of the maturing phase of the Golgi apparatus is?
A. Biconcave
C. Spherical
B. Convex
D. Concave
- Q.74** Which organelle form cell membrane?
A. Cell wall
C. RER
B. SER
D. Golgi body
- Q.75** Which is incorrectly matched:
A. Golgi apparatus – intercellular digestion
B. Cell membrane – cell recognition
C. SER – Carbohydrate metabolism
D. RER – protein synthesis

Lysosomes

- Q.76** What are Autophagosomes?
A. Those lysosomes which eat parts of their own cells to generate energy.
B. Those lysosomes which eat old and worn-out cellular organelles.
C. Lysosomes which help in extracellular digestion
D. Both A and B
- Q.77** Lysosomes are known as “suicidal bags” because of?
A. Parasitic activity
C. Hydrolytic activity
B. Presence of food vacuoles
D. Catalytic activity
- Q.78** Which of the following cell organelle does not contain DNA?
A. Nucleus
C. Lysosomes
B. Mitochondria
D. Chloroplast
- Q.79** The process of self-digestion of selective nonfunctional organelle by cells through the actions of enzymes originating from the cell is called?



- A. Pinocytosis
C. Autophagy
- Q.80** Phagocytosis, autophagy and extracellular digestion are the functions of?
A. Lysosomes
C. Golgi apparatus
- Q.81** A disease caused by the absence of a lysosomal enzyme responsible for lipid catabolism:
A. Tay-Sach's disease
C. Klinefelter's syndrome
- Q.82** The cells which lack lysosomes would have difficulty in which of the following?
A. Digesting food
C. Protein packaging
- Q.83** Lysosomes are formed by:
A. RER
C. Golgi complex
- Plastids/chloroplasts**
- Q.84** The type of plastids found in roots of plants:
A. Chloroplasts
C. Leucoplasts
- Q.85** In the plants, 50 or more thylakoids piled upon each other to form?
A. Granum
C. Stroma
- Q.86** The dense fluid filled region in the chloroplast is called?
A. Grana
C. Thylakoid
- Q.87** Enzymes in Calvin cycle are found in which cell organelle?
A. Smooth endoplasmic reticulum
C. Mitochondrion
- Q.88** Which type of cell would be the most appropriate for the study of chloroplasts?
A. Conducting cell
C. Photosynthetic cell
- Q.89** Stacked of thylakoids in chloroplasts is called?
A. Grana
C. Nucleus
- Q.90** Which of the following organelle is involved in the release of oxygen?
A. Mitochondria
C. Ribosomes
- Q.91** The matrix surrounding the grana in the inner membrane of the chloroplast is called?
A. Cytosol
C. Stroma
- Q.92** Plants store food in:
A. Chloroplast
C. Leucoplast
- Q.93** Double membranous structure having coins like stacks of membranes are known as:
A. Mitochondria
C. Chloroplast
- Q.94** Yellowing and brown end of leaf is because of deficiency of:
A. Chlorophyll
C. Potassium
- Q.95** Colour of petals is due to:
A. Chloroplast
C. Chromoplast
- Q.96** Enzymes for light dependent reaction are present in:
A. Thylakoid membrane of chloroplast
C. Stroma
- B. Endocytosis
D. Cytotoxicity
- B. Mitochondria
D. All of these
- B. Phenylketonuria
D. Down's syndrome
- B. Moving cytoplasm
D. Storage of energy
- B. SER
D. Mitochondria
- B. Chromoplasts
D. All of them
- B. Centrosome
D. Multinucleate
- B. Stroma
D. Intergrana
- B. Chloroplast
D. Golgi complex
- B. Pericycle cell
D. All of these
- B. Stroma
D. None of these
- B. Chloroplast
D. Both A and B
- B. Frets
D. Intergranal lamellae
- B. Chromoplasts
D. Both A and B
- B. Nucleus
D. Golgi apparatus
- B. Nitrogen
D. Iron
- B. Plastid
D. Leucoplast
- B. Lumen of grana
D. Outer membrane



Vacuoles

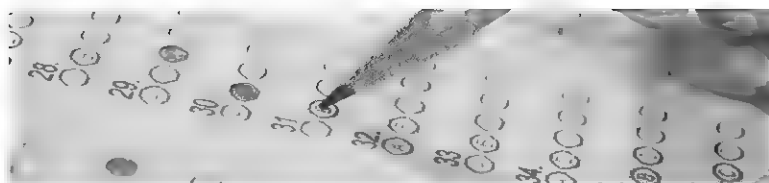
- Q.97** The membrane around the vacuole is known as?
A. Tonoplast B. Elaioplast
 C. Cytoplast D. Amyloplast
- Q.98** The largest organelle in a mature living plant cell is?
 A. Chloroplast B. Nucleus
C. Central vacuole D. Mitochondria
- Q.99** Which of the following organelles are found in both plant and animal cells?
A. Vacuole B. Peroxisomes
 C. Cell wall D. None of these
- Q.100** Under microscopic examination, which cellular structure would differentiate a plant cell from an animal cell?
 A. Ribosomes B. Cell membrane
 C. Cytoplasm **D. Cell vacuole**
- Q.101** Which one of the following is not double membranous structure?
A. Vacuole B. Mitochondria
 C. Chloroplast D. Nucleus

Prokaryote and eukaryote

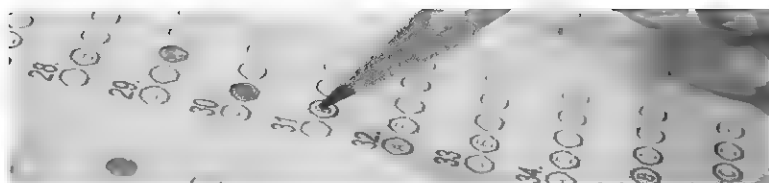
- Q.102** Which combination of organelles is usually present in both animal and plant cells?
 A. Golgi complex, plastids, mitochondria
 B. Plastids, mitochondria, endoplasmic reticulum
 C. Golgi complex, endoplasmic reticulum, centrioles
D. Mitochondria, endoplasmic reticulum, ribosomes
- Q.103** Unlike eukaryotes, prokaryotes have no membrane-bound organelles. How, then, are prokaryotes able to generate energy?
 A. Prokaryotes do not generate energy
 B. Prokaryotes produce energy via photosynthesis
 C. Prokaryotes have specialized mitochondria
D. Prokaryotes generate proton gradients across their plasma membranes
- Q.104** Which statement describes an incorrect difference between a plant cell and bacterial cell?
 A. Bacterial cell has 70S ribosomes whereas a plant cell has 80S ribosomes.
 B. Bacterial cell divides by binary fission whereas a plant cell divides by mitosis.
 C. Bacterial cells do not have a nuclear membrane whereas plant cells have.
D. None of the above
- Q.105** Which of the following components of an animal cell is not observed in a bacterial cell?
A. Nucleus B. Ribosomes
 C. Cell membrane D. DNA
- Q.106** Eukaryotes can share which of the following structures with prokaryotes?
A. Cell wall B. Golgi
 C. Mitochondria D. Nucleoid
- Q.107** The presence of which of the following feature would best indicate a eukaryotic cell?
 A. Cilia B. Plasma membrane
C. Organelles D. Ribosomes
- Q.108** Which structure differentiates eukaryotic from a prokaryotic cell?
 A. Ribosomes **B. Cell wall**
 C. Cell membrane D. Golgi complex

Fluid mosaic model

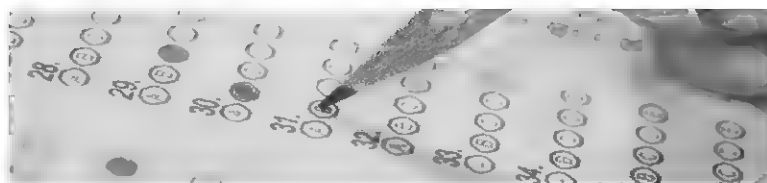
- Q.109** The structure of plasma membrane is mainly held together by:
 A. Proteins B. Carbohydrates
C. Phospholipids D. All of the above
- Q.110** Ions cannot cross which part of the plasma membrane?
A. Phospholipid bilayer B. Channel proteins



- C. Both A and B
D. None of the above
- Q.111** Damage to one of the following immediately kills the cell whether it is prokaryotic or eukaryotic?
A. Nucleus
C. Cell membrane
B. Mitochondria
D. All of these
- Q.112** What part of the cell serves as an intracellular highway?
A. ER
C. Cell membrane
B. Golgi apparatus
D. Mitochondria
- Q.113** Glycolipids in the plasma membrane are located at?
A. Inner leaflet of the plasma membrane
B. The outer leaflet of the plasma membrane
C. Evenly distributed in the inner and outer leaflets
D. Varies to cell types
- Q.114** Which statement is true about lipid bilayer of plasma membrane?
A. Permeable to large ionic polar molecule
B. Permeable to small ionic molecule
C. Permeable to only polar molecule
D. None of the above
- Q.115** Which among the following defines GPI anchored proteins?
A. Integral proteins of the plasma membrane
B. Proteins that bind to ion gated channels in plasma membrane
C. Proteins which randomly bind to lipids of plasma membrane
D. Peripheral proteins of plasma membrane
- Q.116** Secretion of insulin from beta cells of pancreas is an example of which membrane function?
A. Endocytosis
C. Exocytosis
B. Phagocytosis
D. Pinocytosis
- Q.117** Glycolipids and glycoproteins have structural role in which matrix structure of animal and bacterial cell?
A. Extracellular
B. Intracellular
C. Both A and B
D. Plasma membrane
- Q.118** Fatty acids move through the plasma membrane by which transport method?
A. Passive transport
B. Non-facilitated transport
C. Active transport
D. Facilitated transport
- Q.119** What percentage of protein is found in the cell membrane?
A. 20-40
B. 40-50
C. 60-80
D. 90
- Q.120** Cell membrane contains:
A. Lipoproteins and glycolipids
B. Phospholipids and proteins
C. Lipoproteins and phospholipids
D. All of these
- Q.121** Fluidity of cell membrane is due to:
A. Lipid bilayer
B. Proteins partially and fully embedded in it
C. Phospholipids slide pass each other and proteins embedded in it in mosaic manner
D. All of these
- Q.122** Cell membrane is chemically composed of lipids and _____.
A. Protein
B. Carbohydrates
C. Both A and B
D. None of these
- Q.123** According to fluid mosaic model, the plasma membrane is composed of which of the following?
A. Phospholipid
B. Intrinsic proteins
C. Extrinsic proteins
D. All of these
- Q.124** Distribution of intrinsic proteins in the plasma membrane is?
A. Random
B. Symmetrical
C. Asymmetrical
D. None of these



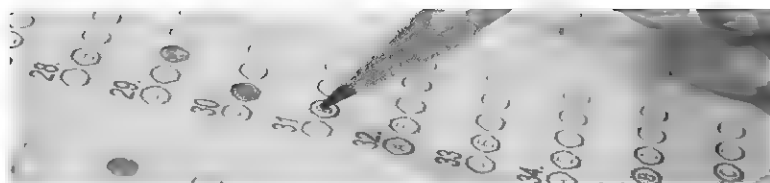
- Q.125** Movement of the material across the cell membrane which does not requiring expenditure of metabolic energy is called?
 A. Active transport
 B. Passive transport
 C. Diffusion
 D. Both B and C
- Q.126** Protein for cell membrane are made by:
 A. Rough endoplasmic reticulum
 B. Smooth endoplasmic reticulum
 C. Nucleus
 D. Mitochondria
- Q.127** The fluid mosaic model of plasma membrane proposes that membranes are:
 A. Solid
 B. Semi-solid
 C. Fluid
 D. Liquid
- Q.128** Which is not an example of transmembrane transport between different subcellular compartments?
 A. Transport from the stroma into thylakoid space
 B. Transport from the cytoplasm into the lumen of the endoplasmic reticulum
 C. Transport from mitochondrial intermembrane space into the mitochondrial
 D. Transport from the endoplasmic reticulum into the Golgi complex
- Q.129** Which of the modes of cellular transport requires energy?
 A. Active transport
 B. Passive transport
 C. Osmosis
 D. Diffusion
- Q.130** Why phospholipids are major part of the lipid bilayer in plasma membranes?
 A. They have a nitrogenous base in the head region
 B. They have fatty acids in the tail region
 C. They are amphipathic in nature
 D. They have a phosphate group in the head region
- Q.131** Carbon dioxide passes through plasma membrane of cells by:
 A. Active transport
 B. Passive transport
 C. Facilitated diffusion
 D. Passive diffusion
- Q.132** Which of the statement about cell membrane is not true?
 A. It contains protein molecules embedded in lipid bilayer
 B. It is a differentially permeable membrane
 C. It contains charged pores thus ions being charged particles across cell membrane much easier than neutral particles
 D. It may get infolded to engulf solid or liquid material
- Q.133** What was the unit membrane model?
 A. Plasma membrane has lipid bilayer
 B. Proteins are embedded in the lipid bilayer
 C. Plasma membrane has charged pores for transport of materials which cannot penetrate through the lipid bilayer
 D. All of the above
- Q.134** Transverse diffusion (flip-flop) is the movement due to which of the following molecules?
 A. Cholesterol molecule
 B. Phospholipid
 C. Protein
 D. Amino acid
- Q.135** How is the ATP molecule used by the cell?
 A. Synthesis of complex compounds
 B. Active transport
 C. Muscular contraction
 D. All of these
- Q.136** Diffusion is opposite to
 A. Osmosis
 B. Effusion
 C. Affusion
 D. None of these
- Q.137** Which of the following substance is most favorable structural component of biological membranes?
 A. Hydrophilic carbohydrates
 B. Hydrophobic fats
 C. Both A and B
 D. None of these



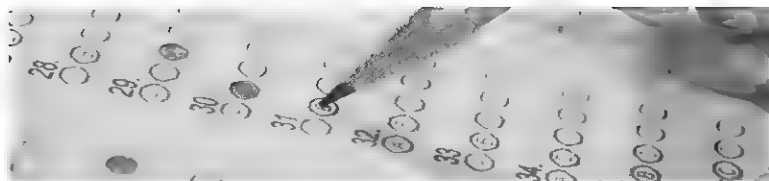
- Q.138** Phosphatidylserine residues in the plasma membrane are located at?
 A. The outer leaflet of the plasma membrane
B. Inner leaflet of the plasma membrane
 C. Evenly distributed in the inner and outer leaflet
 D. None of these
- Q.139** Which one is not cytoplasmic body?
 A. Mitochondria
C. Cell membrane
 B. Vacuole
 D. Ribosome
- Q.140** Plasma membrane by volume is mainly made up of:
 A. Proteins
 C. Glycoproteins
B. Phospholipids
 D. Carbohydrates
- Q.141** It is not a role of cell membrane:
A. Initiation of cell division
 C. Transmission of nerve impulse
 B. Transport of material
 D. Site for receptors
- Q.142** Self-repairing is present in:
 A. Cell wall
 C. Capsule
B. Cell membrane
 D. Slime
- Q.143** The basic framework structure of all types of membranes re :
 A. Glycolipids
C. Lipoproteins
 B. Glycoproteins
 D. Nucleoproteins
- Q.144** Fibers of extracellular matrix are attached to _____ plasma membrane.
 A. Phospholipids
C. Proteins
 B. Glycolipids
 D. Carbohydrates
- Q.145** Which of the statements correctly describes why ions are unable to cross the plasma membrane without channel proteins?
 A. They are unable to cross the hydrophilic phosphate heads of the lipid bilayer
B. They are unable to cross the hydrophobic tails of the lipid bilayer
 C. They are unable to cross both the phosphate heads and fatty acid chains of the lipid bilayer
 D. They are too big to cross the plasma membrane
- Q.146** Hydrophobic character in plasma membrane is exhibited by:
A. Fatty acids in tail
 C. Intrinsic protein
 B. Phospholipid head
 D. Extrinsic protein

Out of Syllabus

- Q.147** What would be the resolving power of the objective length in a microscope, if the eyepiece is of 10X and total magnification is 40X?
A. 4
 C. 40
 B. 10
 D. 400
- Q.148** The function of the centrosome is?
 A. Osmoregulation
 C. Protein synthesis
 B. Secretion
D. Formation of spindle fibres
- Q.149** Centrioles are composed of how many triplets of microtubules?
 A. 6
 C. 12
B. 9
 D. 15
- Q.150** A chromosome in which a centromere stays at one end is called?
 A. Metacentric
 C. Acrocentric
B. Telocentric
 D. All of these
- Q.151** Who opposed the idea that cell is an empty space bounded by thick wall?
 A. Lorenz oken
C. Robert Hook
 B. Schwann
 D. Rudolph Virchow
- Q.152** The image represent by compound microscope is:
 A. Real
 C. Virtual
 B. Virtual inverted
D. Real inverted
- Q.153** Cellular organelles that interact with hydrogen peroxide are called?



- A. Glyoxysomes
C. Ribosomes
B. Lysosomes
D. Peroxisomes
- Q.154 Compound Microscope was first used by:**
A. A.V. Leeuwenhoek
B. Pasture
C. Janssen and Hans
D. None of these
- Q.155 The long unbranched, slender tubulin protein is called?**
A. Microtubules
B. Intermediate filament
C. Actin
D. All of these
- Q.156 Which of the following is not a tenet of the Cell Theory?**
A. Cells carry genetic information in the form of DNA
B. Cells are the basic functional unit of life
C. Cells arise from pre-existing cells
D. All cells have membrane-bound organelles
- Q.157 A cell with fully elastic wall is placed in hypertonic solution. What will not occur?**
A. Change in cell size and shape
B. The whole cell will shrink
C. Cytoplasm shrinks from the cell wall and undergoes plasmolysis
D. Decreases in cell size
- Q.158 Which of the following is involved in the conversion of fats to carbohydrates by oxidation of fats?**
A. Peroxisomes
B. Microsomes
C. Lysosomes
D. Glyoxysomes
- Q.159 Magnifying power of electron microscope as compared to eye is?**
A. 500 X
B. 100 000 X
C. 500 000 X
D. 250 000 X
- Q.160 The human naked eye can differentiate between two points which are how much apart?**
A. 1 mm
B. 0.1 mm
C. 2 dm
D. 1 dm
- Q.161 The rigidity of leaves and younger parts of the plants is contributed by?**
A. Microtubules
B. Mitochondria
C. Actin
D. Glyoxysomes
- Q.162 The isolation of different cellular components to determine their chemical composition can be achieved by?**
A. Cell differentiation
B. Chromatography
C. Cell fractionation
D. All of these
- Q.163 Which of the following statement is incorrect about Glyoxysomes?**
A. They contain enzymes which help in conversion of fatty acids into carbohydrate
B. They are abundant in soybeans but absent in pea
C. They are single membranous organelles
D. They are present throughout life of a plant and provide them with energy through Glyoxylate cycle
- Q.164 What is the correct sequence of steps in cell fractionation?**
A. Homogenization, centrifugation, separation
B. Separation, homogenization, centrifugation
C. Centrifugation, homogenization, separation
D. Homogenization, separation, centrifugation
- Q.165 Size of eukaryotic cell is:**
A. 10-20 μm
B. 10-100 μm
C. 100-200 μm
D. 20-40 μm
- Q.166 Omnis cellula a cellula is hypothesized by:**
A. Schleiden
B. Lorenz Oken
C. Louis Pasteur
D. Rudolph Virchow
- Q.167 Cytoskeleton provides:**
A. Motility, maintenance, synthesis
B. Maintenance, synthesis only
C. Movement, Maintenance only
D. None of above

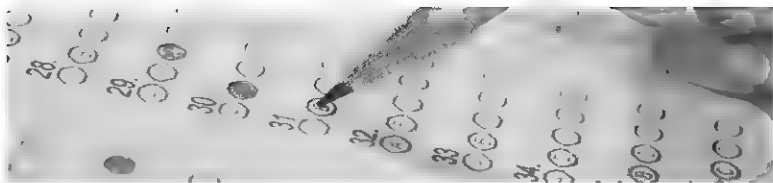


Q.168 Cells have energy in the form of:

- A. Chemical and electrical
- C. Kinetic

B. Mechanical

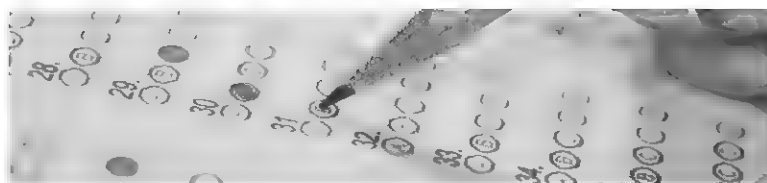
D. Chemical



ANSWER KEY

CELL STRUCTURE AND FUNCTION

1	A	21	A	41	D	61	B	81	A	101	A	121	A	141	A	161	A
2	A	22	A	42	D	62	A	82	A	102	D	122	C	142	B	162	C
3	C	23	A	43	D	63	A	83	C	103	D	123	D	143	C	163	B
4	C	24	B	44	D	64	D	84	C	104	D	124	A	144	C	164	B
5	B	25	D	45	B	65	A	85	A	105	A	125	D	145	B	165	B
6	C	26	D	46	C	66	B	86	B	106	A	126	A	146	A	166	D
7	B	27	D	47	C	67	D	87	B	107	C	127	C	147	A	167	A
8	B	28	C	48	B	68	B	88	C	108	B	128	C	148	D	168	D
9	B	29	D	49	B	69	B	89	A	109	C	129	A	149	B		
10	D	30	C	50	C	70	C	90	B	110	A	130	C	150	B		
11	B	31	B	51	A	71	C	91	C	111	C	131	B	151	C		
12	A	32	C	52	D	72	B	92	C	112	C	132	C	152	D		
13	B	33	A	53	B	73	D	93	C	113	B	133	A	153	D		
14	C	34	B	54	D	74	D	94	A	114	D	134	B	154	A		
15	D	35	C	55	D	75	A	95	C	115	D	135	D	155	A		
16	A	36	C	56	D	76	D	96	A	116	C	136	D	156	A		
17	A	37	C	57	B	77	C	97	A	117	D	137	B	157	C		
18	D	38	C	58	D	78	C	98	C	118	A	138	B	158	D		
19	B	39	D	59	A	79	C	99	A	119	C	139	C	159	D		
20	A	40	A	60	D	80	A	100	D	120	D	140	B	160	B		



Nervous system

- Q.1 Which part of the nervous system controls actions like walking and running?**
 A. Somatic nervous system
 B. Parasympathetic nervous system
 C. Sympathetic nervous system
 D. Peripheral nervous system
- Q.2 Which of the following does not form part of the central nervous system?**
 A. Brain
 B. Spinal cord
 C. Brain stem
 D. Spinal nerves
- Q.3 Central nervous system consists of:**
 A. Brain and spinal cord
 B. Cerebrum and spinal column
 C. Spinal nerves only
 D. Cerebellum and brain stem only
- Q.4 Nervous system is absent in:**
 A. Sycon
 B. Euplectella
 C. Jelly fish
 D. Both a and b
- Q.5 Brachial plexus supply to:**
 A. Heart
 B. Upper limbs
 C. Lower limbs
 D. Abdomen
- Q.6 The response of the sympathetic nervous system is known as:**
 A. Autonomic response
 B. Flight response
 C. Somatic response
 D. Reflex response
- Q.7 Parasympathetic system causes:**
 A. Digestion of food
 B. Accelerated heart beat
 C. High metabolism
 D. Rapid muscle movement
- Q.8 One of the actions of the parasympathetic nervous system is?**
 A. Inhibits peristalsis
 B. Sweat secretion
 C. Constriction of Pupils
 D. Dilates Bronchioles
- Q.9 The autonomic nervous system functions?**
 A. Act on external environment
 B. Regulate the internal environment
 C. Transmit motor information to brain
 D. None of these
- Q.10 The abundant inhibitory neurotransmitter found in the CNS is called?**
 A. Gamma-glutamyltransferase
 B. Gamma-linolenic acid
 C. Gamma-Aminobutyric acid
 D. None of these

Transmission of action potential between cells–synapse

- Q.11 The main transmitter for synapses that lie outside the central nervous system is?**
 A. Adrenaline
 B. Serotonin
 C. Dopamine
 D. Acetylcholine

Hormones

- Q.12 What is the chemical nature of antidiuretic hormone?**
 A. It is a protein
 B. It is an amino acid derivative
 C. It is made from cholesterol
 D. It is a lipoprotein
- Q.13 When vasopressin is not secreted, the condition that occurs is called?**
 A. Acromegaly
 B. Diabetes mellitus
 C. Dwarfism
 D. Diabetes insipidus
- Q.14 Cortisol brings about an increase in blood glucose level mainly by its production from protein and _____.**
 A. Glucagon
 B. Insulin
 C. Estrogen
 D. Progesterone
- Q.15 Which disease is represented by excess MSH secretion?**
 A. Addison's
 B. Alzheimer's
 C. Parkinson's
 D. Cohn's
- Q.16 Primary hormone is:**
 A. STH
 B. FSH
 C. LH
 D. Prolactin
- Q.17 Which of the following is not a gonadotrophic hormone?**
 A. Estrogen
 B. LH



- C. FSH
Q.18 In females testosterone is produced from:
A. Graffian follicle
C. Adrenal medulla
Q.19 Vascularization in endometrium is induced by:
A. LH
C. FSH
Q.20 Which of the following is taken from blood by the liver due to insulin?
A. Glucagon
C. Glucocorticoid
Q.21 Deficiency in the production of parathormone causes which of the following disease?
A. Brittle bones
C. Rickets
Q.22 Tetany is considered to be the result of a
A. Hyperglycemia
C. Hypoglycemia
Q.23 Thyroid stimulating hormone is produced by:
A. Anterior lobe of thyroid
C. Posterior lobe of pituitary gland
Q.24 In humans placenta is established by:
A. Hypothalamus
C. Thalamus
Q.25 Deficiency of cortical hormones causes:
A. Cushing syndrome
C. Dwarfism
Q.26 Goiter develops in which case?
A. Hyperthyroidism
C. Both A & B
Q.27 Thyroid hormone increases metabolic rate by:
A. Breakdown of nucleic acids
C. Breakdown of proteins
Q.28 Insufficient thyroxine in adults leads to:
A. Dwarfism
C. Cretinism
Q.29 Which of the following is the effect of STH?
A. Growth of body
C. Glucose breakdown
Q.30 Decreased production of parathyroid leads to:
A. Increase in calcium levels
C. Decrease in calcium levels
Q.31 It is not secreted by placenta:
A. Progesterone
C. Human placental lactogen
Q.32 FSH is released from:
A. Pituitary gland
C. Brain
Endocrine glands
Q.33 The pea-shaped gland attached to the brain's hypothalamus is known as:
A. Iodopsin glands
C. Rhodopsin glands
Q.34 Thymus is found in human body ____.
A. In the medulla oblongata
C. Both A & B
Q.35 Largest endocrine gland is ____.
A. Pancreas
D. Prolactin
B. Adrenal cortex
D. None
B. Estrogen
D. ICSH
B. Glucose
D. All of these
B. Soft bones
D. Tetany
B. Hypercalcemia
D. Hypocalcaemia
B. Exterior lobe of pituitary gland
D. Anterior lobe of pituitary gland
B. Progesterone
D. Estrogen
B. Addison's disease
D. Cretinism
B. Hypothyroidism
D. None of the above
B. Breakdown of vitamins
D. Breakdown of carbohydrates
B. Myxedema
D. Grave's disease
B. Body metabolism
D. Heat production
B. Increase in vitamin B₁₂
D. Decrease in vitamin B₁₂
B. Estrogen
D. LH
B. Hypothalamus
D. Blood
B. In the mediastinum if the upper thorax
D. None
B. Pituitary



C. Thyroid

D. Thymus

Feedback mechanism

Reflexes and reflex arc

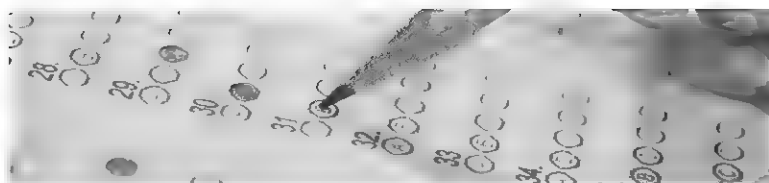
- Q.36** Which of these does not participate in reflex actions?
 A. Motor neuron
C. Pituitary
 B. Effector
 D. Spinal cord
- Q.37** Most reflex arcs are:
 A. Monosynaptic reflex
 C. Hemi Synaptic Reflex
B. Polysynaptic reflex
 D. None of these
- Q.38** The patellar reflex and the Achilles reflex are examples of:
A. Monosynaptic reflex
 B. Blood and water
 C. Hemi Synaptic reflex
 D. Blood and fluid
- Q.39** The term that should be last in the reflex sequence is:
 A. Receptor
 C. Sensory neuron
B. Effector
 D. Motor neuron
- Q.40** Reflex action is controlled by:
 A. Peripheral nervous system
 C. Autonomic nervous system
B. Central nervous system
 D. Circulatory system
- Q.41** The path taken by the nerve impulses in a reflex is called:
 A. Nerve cell
 C. Receptor cells
B. Reflex arc
 D. Mixed nerve
- Q.42** Reflex action is the simplest form of response in:
A. Higher Animals
 B. Smaller animals
 C. Simpler animals
 D. Lowest animals
- Q.43** Which part of the nervous system is responsible for controlling reflex action?
 A. Corpus callosum
 C. Vermis
 B. Pons
D. Spinal cord
- Q.44** Monosynaptic refers to the presence of how many chemical synapse/s?
A. 1
 B. 2
 C. 3
 D. 4
- Q.45** All of the following about reflex action are true except:
A. It is voluntary
 B. It is found in higher animals
 C. It is involuntary
 D. All of these
- Q.46** Which of the following is an example of superficial reflex?
 A. Ankle jerk
C. Abdominal reflex
 B. Knee jerk
 D. Both A & B
- Q.47** Reflex arc comprises of:
 A. Motor nerve
C. Both A and B
 B. Sensory nerve
 D. Mixed nerve
- Q.48** Which type of reflex affect inner organs?
 A. Autonomic reflex arc
C. Both A and B
 B. Somatic reflex arc
 D. None of these
- Q.49** A neural pathway that controls an action reflex is called:
 A. Nerve cell
 C. Receptor cells
B. Reflex arc
 D. Mixed nerve
- Q.50** Which of the following is made up of an afferent pathway from a receptor and an efferent pathway to an effector?
 A. Nerve cell
 C. Receptor cells
B. Reflex arc
 D. Mixed nerve
- Q.51** An involuntary and nearly instantaneous movement in response to a stimulus is called:
A. Reflex
 C. Neuron
 B. Reflex arc
 D. Synapse
- Q.52** The shortest way by which impulses travel from the receptor to the effector is called?



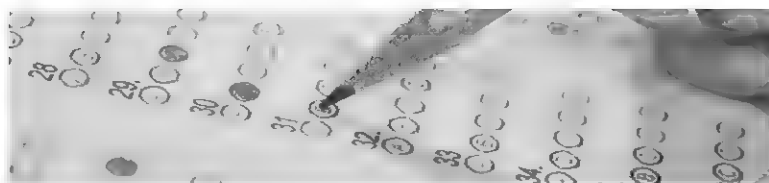
- A. Synapse
C. Reflex arc
- Q.53** The stretch reflex, the Golgi tendon reflex, the crossed extensor reflex and the withdrawal reflex are included in:
A. Stretch reflex
C. Golgi tendon reflex
B. Reflex arc
D. Voluntary response
- Levels of the spinal cord and its main functions**
- Q.54** Gray matter is primarily composed of:
A. Axons
C. Neuron somas
B. Synapse
D. None of these
- Q.55** The spinal cord is part of:
A. Brain
C. Peripheral nervous system
B. Central nervous system
D. Somatic division
- Q.56** What is the length of spinal cord?
A. 10-20 cm
C. 40-50 cm
B. 20-30 cm
D. 60-90 cm
- Q.57** The spinal cord and spinal nerve roots are wrapped within three layers called:
A. Pleura
C. Synapse
B. Meninges
D. None of these
- Q.58** The spinal cord acts as a link between body parts and _____.
A. Brain
C. Heart
B. Skull
D. Lungs
- Q.59** The material in brain and spinal cord contains cell bodies and dendrite of nerve cells is:
A. White matter
C. Brown matter
B. Blue matter
D. Gray matter
- Q.60** Choose the region of spinal cord:
A. Cervical
C. Lumbar
B. Thoracic
D. All of these
- Q.61** The spinal cord is continuous with which part of the brain?
A. Cerebrum
C. Cerebellum
B. Medulla oblongata
D. Pons
- Q.62** In the peripheral nervous system, the nerves that arise from spinal cord and brain are called?
A. Frontal nerves
C. Cranial nerves
B. Temporal nerves
D. Spinal nerves
- Q.63** Out of 31 pairs of spinal nerves, how many pairs of coccygeal nerves are there?
A. 1
C. 10
B. 5
D. 12
- Q.64** The ventral root of the spinal cord contains axons of:
A. Sensory neuron
C. Mixed neuron
B. Motor neuron
D. Spinal neuron
- Q.65** Out of 31 pairs of spinal nerves, how many pairs of lumbar nerves are there?
A. 5
C. 15
B. 10
D. 20
- Q.66** The medulla oblongata is found on which of the following regions?
A. Top of brain
C. Behind the hypothalamus
B. Behind the brainstem
D. Behind the thalamus
- Q.67** Out of 31 pairs of spinal nerves, how many pairs of sacral nerves are there?
A. 5
C. 12
B. 10
D. 15
- Q.68** The dorsal root of spinal cord is:
A. Sensory
C. Mixed
B. Motor
D. All A, B and C are correct
- Q.69** White matter has:
A. Myelinated sheath
B. Non-myelinated sheath



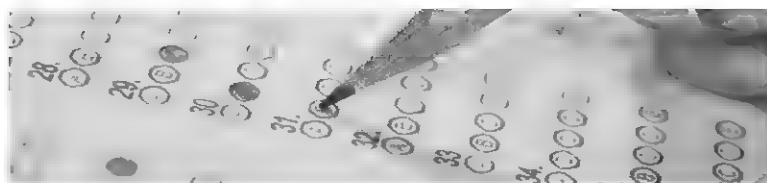
- C. Myelinated neuron**
Q.70 The shape of grey matter is:
 A. Spherical
C. Butterfly
 B. Mosquito
 D. Rectangular
- Q.71** The spinal cord is divided into how many different regions?
 A. 2
C. 4
 B. 6
 D. 8
- Q.72** How many laminae present in the spinal cords grey matter?
 A. 10
 C. 12
 B. 8
D. 9
- Q.73** White matter is primarily composed of:
A. Axons
 C. Neuron somas
 B. Synapse
 D. None of these
- Q.74** Out of 31 pairs of spinal nerves, how many pairs of thoracic nerves are there?
 A. 8
C. 12
 B. 10
 D. 15
- Q.75** Number of pairs of spinal nerves are:
A. 31
 C. 13
 B. 12
 D. None
- Q.76** What is the most important structure between body and brain?
 A. Neck
 C. Blood vessels
B. Spinal cord
 D. Skeleton
- Parts of the brain with their main functions**
- Q.77** Regulation of _____ is not a function of hypothalamus in humans.
 A. Body temperature
 C. Urine osmolarity
 B. Blood water potential
D. Circadian rhythms & emotions
- Q.78** The part of forebrain which lies below the cerebrum is?
 A. Hypothalamus
 C. Cerebellum
B. Thalamus
 D. Cerebral cortex
- Q.79** Which portion of the brain is primarily responsible for transmitting the information to other parts of the nervous system?
 A. White matter
C. Medulla
 B. Gray matter
 D. All A, B and C
- Q.80** The largest part of forebrain which controls the intelligence, emotions and skeletal muscles is classified as?
 A. Hypothalamus
 C. Cerebellum
 B. Thalamus
D. Cerebrum
- Q.81** Sensory areas that receive impulses from the skin are contained by which of the following?
 A. Frontal lobe
 C. Occipital lobe
B. Parietal lobe
 D. Temporal lobe
- Q.82** Breathing and heart rate is controlled by which of these?
 A. Corpus callosum
C. Medulla
 B. Hippocampus
 D. Thalamus
- Q.83** Which of the following is required for learning?
 A. Medulla
 C. Hypothalamus
 B. Thalamus
D. Hippocampus
- Q.84** Which of the followings is related to hypothalamus?
 A. Sleep-wake cycle
 C. Thermoregulation
 B. Water balance
D. All of these
- Q.85** Midbrain is also known as:
 A. Pons
 C. Medulla
B. Mesencephalon
 D. All of these
- Q.86** It is not correct about cerebrospinal fluid:
 A. Present between meninges
 B. Provides protection



- C. Fills central canal of spinal cord
D. pH is below 7
- Q.87 Brain part that coordinates skeletal muscles:**
A. Cerebrum
C. Amygdala
B. Cerebellum
D. Medulla
- Q.88 It acts as a relay center connecting hindbrain with the forebrain:**
A. Forebrain
C. Hindbrain
B. Midbrain
D. Limbic system
- Q.89 Which of the following is not the function of medulla oblongata?**
A. Breathing
B. Swallowing
C. Connecting between brain and spinal cord
D. Heart beat
- Q.90 Which is involved in long term memory?**
A. Cerebrum
C. Hippocampus
B. Hypothalamus
D. Thalamus
- Q.91 Which of these is involved in coordinated movements of the body?**
A. Cerebellum
C. Medulla
B. Cerebrum
D. Pons
- Q.92 The diencephalon comprises of:**
A. Pons and medulla
C. Pons and medulla
B. Thalamus and limbic system
D. Hypothalamus and limb
- Q.93 The brain is protected by:**
A. Sacrum
C. Humerus
B. Cranium
D. Scapula
- Q.94 The cerebrospinal fluid is similar in composition to _____.
A. Amniotic fluid
C. Synovial fluid
B. Pleural fluid
D. Blood plasma**
- Q.95 Which fluid bathes the neurons of brain and spinal cord and provides cushions against the bumps and jolts?**
A. Blood
C. Intracellular fluid
B. Interstitial fluid
D. Cerebrospinal fluid
- Q.96 The brain is mainly divided into _____ parts.**
A. 2
C. 4
B. 3
D. 5
- Q.97 The embryonic hindbrain gives rise to which structures in brain?**
A. Diencephalon
C. Cerebrum and basal ganglia
B. Midbrain
D. Cerebellum, pons and medulla oblongata
- Q.98 The communication between the two hemispheres is the function of:**
A. Corpus callosum
C. Cerebellum
B. Hindbrain
D. Cerebrum
- Q.99 The composition of brain stem is:**
A. Spinal cord, axon, vertebra
C. Medulla, pons, midbrain
B. Cerebrum, cerebellum, pons
D. Thalamus, midbrain, pons
- Q.100 Which lobe is involved in short-term memory, speech, musical rhythm and some degree of smell recognition?**
A. Frontal
C. Temporal
B. Parietal
D. Occipital
- Q.101 Which of the following is involved in sleeping and waking?**
A. Thalamus
C. Hypothalamus
B. Brain stem
D. Cerebellum
- Q.102 Which part of the brain connects the cerebrum with the spinal cord?**
A. Forebrain
C. Cerebellum
B. Cerebrum
D. Brainstem
- Q.103 The functional parts of forebrain are:**
A. Thalamus and limbic system
B. Thalamus and cerebrum



- C. Cerebrum, limbic system and thalamus** **D. Cerebrum and limbic system**
- Q.104 The brain portion that is reduced in humans is:**
A. Forebrain **B. Midbrain**
C. Hindbrain D. Limbic system
- Q.105 The auditory relay center is found in:**
A. Corpus callosum B. Hindbrain
C. Forebrain **D. Midbrain**
- Q.106 Hindbrain includes:**
A. Medulla, pons and cerebellum. B. Medulla, cerebellum and hypothalamus.
C. Cerebellum, medulla and brainstem. D. All of the above.
- Q.107 Which part increase the surface area of forebrain?**
A. Cerebral cortex B. Infundibulum
C. Corpus callosum D. None of the above
- Q.108 Which brain part is responsible for our basic and primitive emotions?**
A. Limbic system B. Thalamus
C. Hypothalamus D. Cerebrum
- Q.109 The thalamus and the hypothalamus are located in which region of the brain?**
A. Brain stem B. Cerebrum
C. Cerebellum **D. Diencephalon**
- Q.110 The left side of the body is controlled by:**
A. Left cerebral hemisphere **B. Right cerebral hemisphere**
C. Hippocampus D. Corpus callosum
- Q.111 The lighter, inner section of the brain is called:**
A. White matter B. Gray matter
C. Reflex arc D. Medulla
- Q.112 The brain area responsible for screening all incoming sensory data is:**
A. Hypothalamus B. Thalamus
C. Cerebellum **D. Cerebral cortex**
- Q.113 The brain part involved in conscious activities is:**
A. Cerebral cortex B. Limbic system
C. Brain stem D. Thalamus
- Q.114 Medulla, pons and cerebellum are found in which brain part?**
A. Corpus callosum B. Midbrain
C. Forebrain **D. Hindbrain**
- Q.115 The darker, outer portion of the brain is called:**
A. White matter **B. Gray matter**
C. Reflex arc D. Medulla
- Q.116 Central nervous system is present in:**
A. Asymmetrical animals **B. Bilaterally symmetrical animals**
C. Radial symmetrical animals D. Both B and C
- Nerve impulse**
- Q.117 Terminal branches of axons end in:**
A. Myelin sheath B. Dendrites of the next neuron
C. Synaptic cleft D. Postsynaptic membrane
- Q.118 Resting potential in nerve cells is maintained by:**
A. Sodium pumps B. Potassium pumps
C. Calcium pumps **D. None of the above**
- Q.119 What is the condition of the neurons under resting membrane potentials?**
A. Inner surface of neuron is more positive
B. Both of these surfaces are equally positive
C. Outer surface of neuron is more positive
D. All of these
- Q.120 Resting membrane potential is:**
A. -80 mv **B. -70 mv**
C. 50 mv D. -85 mv
- Q.121 What is the approximate value of the active membrane potential?**



- A. 0.17V
C. 0.05 V
- Q.122** In myelinated neurons the impulse jumps from node to node, what is this transmission called?
A. Myelinated impulse
C. Saltatory impulse
- Q.123** Nerve cells transmit messages faster when they have:
A. Many dendrites
C. Non-myelinated axons
B. Myelinated axons
D. Many genes
- Q.124** The sites where nerve impulse is transmitted from the nerve endings to the skeleton muscle cell membranes?
A. Z discs
C. Sarcomeres
D. Neuromuscular junctions
- Q.125** Repolarization is restored when:
A. Sodium ions diffuse in
C. Potassium diffuses in
B. Potassium diffuses out
D. Sodium diffuses out
- Q.126** Acetylcholine is:
A. Enzyme
C. PNS neurotransmitter
B. Metabolic intermediate
D. CNS neurotransmitter

Steps involved in nervous coordination

- Q.127** Stretch receptors are present in _____ of the tetrapods.
A. Hepatic arteries
C. Renal arteries
B. Carotid arteries
D. Pulmonary arteries
- Q.128** Stimulus of deep pressure is detected by:
A. Pacinian corpuscles
C. Meissner's corpuscles
B. Krause end bulb
D. Merkel's endings
- Q.129** Stretch receptors are present in _____ of tetrapods.
A. Muscles only
C. Both A and B
B. Organs only
D. Bone only
- Q.130** Receptors are:
A. Brain
C. Eye and nose
B. Muscle and glands
D. Nerve cells
- Q.131** Which types of the receptors are present in the ear?
A. Chemoreceptors
C. Thermoreceptors
D. Mechanoreceptors
B. Photoreceptors
- Q.132** After leaving the spinal cord, the spinal nerve gets divided into nerve fibers, connecting to which of the following?
A. Receptors
C. Midbrain
B. Effectors
D. All parts of the body
- Q.133** The sensory neuron has pain-sensitive endings in _____.
A. Hypothalamus
C. Skin
B. Bones
D. Muscles
- Q.134** Synaptic vesicles discharge which of the following chemical at the neuromuscular junction?
A. Acetylcholine
C. Estradiol
B. Adrenaline
D. Testosterone
- Q.135** Components of neural arc:
A. 5
C. 7
B. 6
D. 4

Neurons (Structure and Types)

- Q.136** One of the functions of the neuroglial cells is to protect and support which of the following?
A. Nephrons
C. Neurons
B. Myoid cells
D. none of these



- Q.137** The gap in the myelin sheath between adjacent Schwann cells is called?
 A. Dendrite
C. Node of Ranvier
 B. Soma
 D. Stroma
- Q.138** It carries impulses away from neuron:
A. Axon
 C. Soma
 B. Dendrites
 D. Dendron
- Q.139** The concentrations of the cell bodies of the neurons called?
 A. Axons
C. Ganglia
 B. Introns
 D. Dendrites
- Q.140** _____ carry information towards the soma of neuron.
A. Dendrites
 C. Perikaryon
 B. Axon
 D. Both A and B
- Q.141** Staining part of neuron is called:
 A. Axon
C. Cell body
 B. Dendrites
 D. A and C
- Q.142** The neurons responsible for converting various external stimuli that come from the environment into corresponding internal stimuli is called:
 A. Motor
B. Sensory
 C. Both A and B
 D. Mixed
- Q.143** Interneuron is also known as:
A. Relay neuron
 C. Mixed neuron
 B. Sensory neuron
 D. Synapse
- Q.144** Which of the following statement about neuron is incorrect?
 A. They not only conduct impulses but also generate them
 B. They are not the only cellular component of nervous system
 C. They may show limited regenerative capabilities
D. Like all the living cell, when they mature and divide to form similar cells
- Q.145** Motor neuron are multipolar but:
A. Less branched
 C. No branched
 B. More branched
 D. None
- Q.146** Node of Ranvier are also known as:
 A. Myelin sheath
 C. Myofibril node
B. Neurofibril node
D. None
- Q.147** Nicotine may induce:
 A. Vomiting
 C. Tetanus
 B. Diarrhoea
D. Both A & B
- Q.148** A motor neuron and all the muscle fibers it supplies is called:
A. Motor unit
 C. Neural unit
 B. Neuromuscular junction
 D. Microtubules
- Q.149** The neurons that interpret and receive information and stimulate motor neurons are what type of neuron?
 A. Sensory neurons
C. Interneurons
 B. Motor neurons
 D. Rotator neurons
- Q.150** Which is not a neurotransmitter?
 A. Nor-epinephrine
 C. Dopamine
B. L-Dopa
 D. None
- Q.151** Which form brain and spinal cord?
 A. Sensory neurons
C. Interneurons
 B. Motor neurons
 D. Dendrites
- Q.152** Cytoplasm and ribosomes are present in which part of neuron?
 A. Dendrite
B. Cell body
 C. Axon
 D. All of these

Positive feedback mechanism



Q.153 Which of the following is not an example of positive feedback?

- A. A forest fire slowly expands outward, which provides it with even more fuel to burn.
- B. During childbirth, oxytocin creates a stimulus which causes the hypothalamus to release more oxytocin
- C. As more buffalo begin to run in a herd, the overall level of panic increases. This results in even more buffalo running.
- D. As blood calcium levels increase, parathyroid hormone (PTH) is reduced.**

Negative feedback mechanism

Q.154 One of these processes does not happen as a result of negative feedback mechanism in humans?

- A. Secretion of insulin by pancreas in response to increased blood glucose concentration.
- B. Secretion of oxytocin in response to dilation of cervix during childbirth.**
- C. Secretion of glucagon by pancreas in response to decreased blood glucose concentration.
- D. All of the above.

Out of Syllabus

Q.155 When cocaine is used as a stimulant, it interferes with the CNS at the reuptake of which hormone?

- A. Testosterone
- B. Dopamine**
- C. Serotonin
- D. Adrenaline

Q.156 Experience has no influence on which type of behavior?

- A. Kinesis**
- B. Imprinting
- C. Habituation
- D. Insight learning

Q.157 Which of the following is not a function of Absciscic acid?

- A. Inhibits stem and root growth during drought.
- B. Closing of stomata during wilting.
- C. Inhibits flowering in long-day plants
- D. Promotes bud initiation during growth season**

Q.158 Which statement is incorrect about ethylene production?

- A. Climacteric is burst of respiratory activity in fruit ripening**
- B. It is associated with ethane production
- C. It helps in fruit ripening
- D. It helps in fruit set

Q.159 The promoter of leaf senescence is?

- A. Gibberellins
- B. Cytokinins
- C. Auxins
- D. Absciscic acid**

Q.160 Disorders caused due to disturbance in nerve impulse generation and transmission is called?

- A. Nerve impulse disorder
- B. Nervous disorder**
- C. Transmission disorder
- D. Functional disorder

Q.161 A crawling snail when we tap glass retract into its shell, tapping has no effect. This form of learning is:

- A. Habituation**
- B. Imprinting
- C. Insight learning
- D. Latent learning

Q.162 Most of brain tumors are caused by:

- A. Mutation in DNA of proteins involved in glycolysis
- B. Mutation in DNA of proteins involved in cell cycle regulation**
- C. Mutation in DNA of proteins involved in fatty acid metabolism
- D. Mutation in DNA of proteins involved in extracellular transport

Q.163 Type of behavior that evolves during life cycle of individual:

- A. Learning**
- B. Instinctive
- C. Both A and B
- D. None

Q.164 Brain tumors are due to:

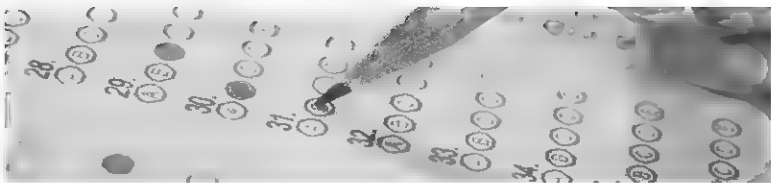
- A. Neuroglial cells**
- B. Neurons
- C. Epithelial cells
- D. Connective tissues

Q.165 Memory loss occurs in which disease?

- A. Parkinson
- B. Alzheimer**



- C. Epilepsy
- Q.166 In which condition, brain produced more impulses than normal:**
A. Epilepsy
B. Alzheimer's disease
C. Parkinson's disease
D. Lou Gehrig's disease
- Q.167 Commercial use of cytokinins:**
A. Keeping flower fresh
B. Keeping lettuce fresh
C. Break seed dormancy
D. All of these
- Q.168 Which plant hormone promotes abscission?**
A. Auxins
B. Gibberellins
C. Cytokinins
D. Absciscic acid

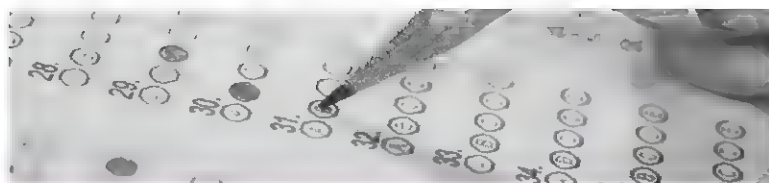


ANSWER KEY

COORDINATION AND CONTROL/NERVPUS AND CHEMICAL

COORDINATION

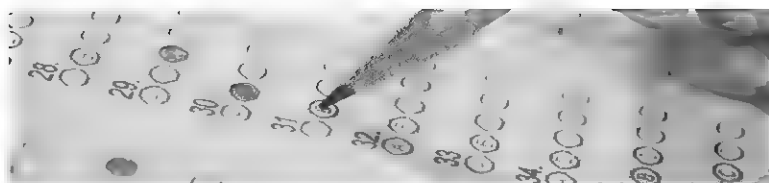
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2	D	22	D	42	A	62	A	82	C	102	D	122	C	142	B	162	B
3	A	23	D	43	D	63	A	83	D	103	C	123	B	143	A	163	A
4	D	24	B	44	A	64	B	84	D	104	B	124	D	144	D	164	A
5	B	25	B	45	A	65	A	85	B	105	D	125	B	145	A	165	B
6	B	26	C	46	C	66	B	86	D	106	A	126	C	146	D	166	A
7	A	27	D	47	C	67	A	87	B	107	A	127	B	147	D	167	D
8	C	28	B	48	C	68	A	88	B	108	A	128	A	148	A	168	D
9	B	29	A	49	B	69	C	89	C	109	D	129	C	149	C		
10	C	30	C	50	B	70	C	90	C	110	B	130	C	150	B		
11	D	31	D	51	A	71	C	91	A	111	A	131	D	151	C		
12	A	32	A	52	C	72	D	92	B	112	D	132	B	152	B		
13	D	33	D	53	B	73	A	93	B	113	A	133	C	153	D		
14	A	34	B	54	C	74	C	94	D	114	D	134	A	154	B		
15	A	35	A	55	B	75	A	95	D	115	B	135	A	155	B		
16	D	36	C	56	C	76	B	96	B	116	B	136	C	156	A		
17	A	37	B	57	B	77	D	97	D	117	C	137	C	157	D		
18	B	38	A	58	A	78	B	98	A	118	D	138	A	158	A		
19	B	39	B	59	D	79	C	99	C	119	C	139	C	159	D		
20	B	40	B	60	D	80	D	100	C	120	B	140	A	160	B		



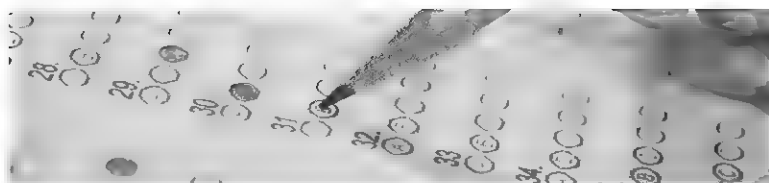
DIVERSITY AMONG ANIMALS

Characteristics and diversity among the animals (animal phyla, characteristics)

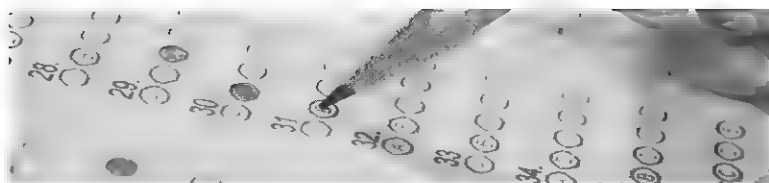
- Q.1** The fate of each blastomere is foretold. What will be the cleavage?
 A. Spiral and indeterminate
 B. Radial and indeterminate
 C. Radial and indeterminate
D. Spiral and determinate
- Q.2** All of the following coelenterates show alternation of generation except:
 A. *Hydra*
 B. *Obelia*
 C. *Aurelia*
 D. All of these
- Q.3** Which system is present in nematodes?
 A. Sac - like digestive system
 B. Circulatory system
 C. Respiratory system
D. Tube - like digestive system
- Q.4** These give rise to nematocysts in Cnidaria:
 A. Cnidocytes
 B. Gastrozooids
 C. Hydrozooids
 D. Mesoglea
- Q.5** Typically spiders' blood is blue due to the presence of which of the following?
 A. Haemoglobin
 B. Haemoerythrin
C. Haemocyanin
 D. Both B and C
- Q.6** 80% of the food of sponges consists of which of the following?
 A. Detrital organic particles
 B. Phytoplanktons
 C. Zooplankton and small animal
 D. All of these
- Q.7** Pseudocoelom develops from which of the following?
 A. Blastopore
 B. Plastoquinone
 C. Splitting of mesoderm
D. Blastocoel
- Q.8** Exoskeleton of coelenterates is made up of which of the following material?
 A. Calcium
 B. Silica
 C. Chitin
 D. Lignin
- Q.9** Which of the following use book lungs to breathe?
 A. Earthworm
B. Scorpions
 C. Fish
 D. All of these
- Q.10** Sub-kingdom parazoa includes:
 A. Annelida
 B. Cnidaria
C. Porifera
 D. Protozoa
- Q.11** It is not a parasite:
 A. Annelida
 B. Nematoda
C. Porifera
 D. Platyhelminthes
- Q.12** Proglottids are present in:
 A. *Dugesia*
 B. *Schistostoma*
 C. *Fasciola*
D. Taenia
- Q.13** Respiratory pigment present in Molluscs is:
 A. Hemoglobin
B. Haemocyanin
 C. Myoglobin
 D. None of the above
- Q.14** Deuterostomes have:
 A. Spiral cleavage
 B. Mouth develop form blastopore
C. Mesoderm is formed form developing gut
 D. Schizocoelous
- Q.15** Malpighian tubules are characteristic of:
 A. Earth worm
 B. Leech
C. Cockroach
 D. Star fish
- Q.16** In which era mammals dominated?
 A. Paleozoic
 B. Mesozoic
C. Cenozoic
 D. Proterozoic
- Q.17** Gut of acoelomates develop from:
 A. Mesoderm
B. Endoderm
 C. Mesoglea
 D. Ectoderm



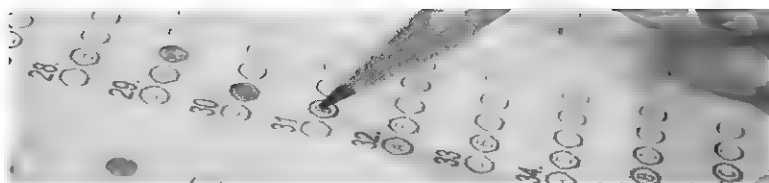
- Q.18** *Periplaneta* belongs to which phylum?
A. Mollusca
C. Echinodermata
B. Annelida
D. Arthropoda
- Q.19** The survival of an animal depends upon its ability to take some _____ from its environment?
A. Hydro carbons
C. Chemical
B. Organic molecules
D. Inorganic molecules
- Q.20** Free living example of Platyhelminthes is?
A. Dugesia
C. Taenia
B. Fasciola
D. All of these
- Q.21** Chitinous Setae are the locomotary organs of annelids which are present on?
A. Cell wall
C. Nucleolus
B. Prostomium
D. Parapodia
- Q.22** Polychaeta have which of the following organs?
A. Tentacles
C. Eyes
B. Palps
D. All of these
- Q.23** Which is not the characteristic of triploblasts?
A. They may be coelomate pseudocoelomate or acoelomate
B. They are included in grade bilateria
C. All of them have digestive system
D. All of them have blood vascular system
- Q.24** *Ascaris Lumbericoides* is a:
A. Intestinal parasite
C. Stomach parasite
B. Blood parasite
D. Ureteral parasite
- Q.25** In which of the following mesoderm is derived from wall of archenteron:
A. Protostomes
C. Deuterostomes
B. Diploblastic
D. Acoelomates
- Q.26** Class Aves has advanced:
A. Pons
C. Cerebrum
B. Medulla
D. Cerebellum
- Q.27** An example of largest invertebrate:
A. Squid
C. Octopus
B. Spider
D. Armillaria
- Q.28** In which of the following animals, placenta is formed?
A. Prototherians
C. Eutherians
B. Metatherians
D. All of these
- Q.29** Circulatory system is open type in all of the following except?
A. Arthropoda
C. Pelecypoda
B. Gastropoda
D. Cephalopoda
- Q.30** Which of the following is correct about insects?
A. Four pair of legs
C. Thorax is not present
B. Six jointed legs
D. Abdomen is attached to head
- Q.31** Sperms released in water are carried to the mesenchyme in sponges by?
A. Stipules
C. Spines
B. Spicules
D. Amoeboid cell
- Q.32** The organs of locomotion in annelids are which of the following?
A. Muscles
C. Parapodia
B. Hydrostatic skeleton
D. Bones
- Q.33** Division of labor is not seen in which of these multicellular animals?
A. Hydra
C. Blood fluke
B. Euplectella
D. Tapeworm
- Q.34** Birds are different from mammals in all except:
A. They have feathers instead of hairs
C. They lay hard shell eggs
B. They are warm blooded
D. They have syrinx as voice organ
- Q.35** Mammary glands are present in:
A. Eutheria
B. Metatheria



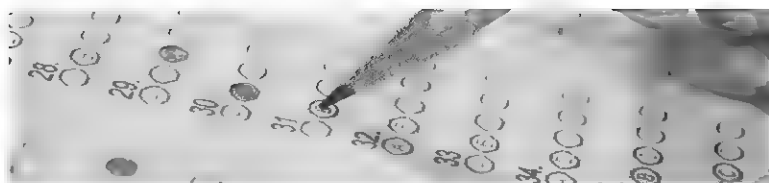
- C. Prototheria
Q.36 Which of the following has lungs?
A. Shark
C. Rays
Q.37 Placenta is related to:
A. Sheep
C. Duck bill platypus
Q.38 Main difference between hemichordata and chordata lies in:
A. Possession of body cavity
C. Nervous system
Q.39 Pseudocoelom is a characteristic feature of which of the following?
A. Coelenterates
C. Annelids
Q.40 Polymorphism is a characteristic feature of which group of animals?
A. Cnidaria
C. Platyhelminthes
Q.41 The single main opening of the sponge cavity is known as?
A. Ostia
C. Spongocoel
Q.42 All the animals of the grade radiata are which of the following?
A. Unicellular
C. Both a and b
Q.43 The only aquatic arthropods:
A. Crustaceans
C. Myriapods
Q.44 Cnidaria is characterized by which of the following?
A. Tissue level of organization
C. Nematoblasts
Q.45 These animals have only left aortic arch in their circulatory system.
A. Crocodiles and mammals
C. Mammals only
Q.46 The animals in which coelom is formed due to splitting of mesoderm are known as which of the following?
A. Pseudocoelom
C. Amphicoelous
Q.47 Mytilus and Anodonta are example of which type of Molluscs?
A. Gastropods
C. Cephalopods
Q.48 Which of the following is not a characteristic feature of tapeworm?
A. Each body segment has two sets of male and female reproductive organs
B. The digestive tract develops from endodermal cells in the embryo
C. The body can be cut into two parts, which are mirror images of each other, in one plane only
D. None of the above
Q.49 The skeleton of the sponges is in the form of variously shaped needle like structures called:
A. Stipules
C. Spine
Q.50 Euplectella belongs to phylum
A. Porifera
C. Echinoderm
Q.51 All of the following are true for Platyhelminthes except?
A. Triploblastic
C. Coelomate
Q.52 The larvae of which of these animals resemble those of chordates?
D. All of these
B. Dipnoi
D. None
B. Spiny ant eater
D. Kangaroo
B. Number of germinal layers
D. Body symmetry
B. Platyhelminthes
D. Aschelminthes
B. Annelida
D. Echinodermata
B. Osculum
D. both a and b
B. Triploblastic
D. Diploblastic
B. Arachnida
D. Gastropods
B. Coelenteron
D. All of these
B. Birds and mammals.
D. All of the above
B. Schizocoelous
D. Enterocoelous
B. Bivalves
D. None of the above
B. Brails
D. Spicules
B. Ctenophora
D. None of the above
B. Bilateral symmetry
D. Flatworms



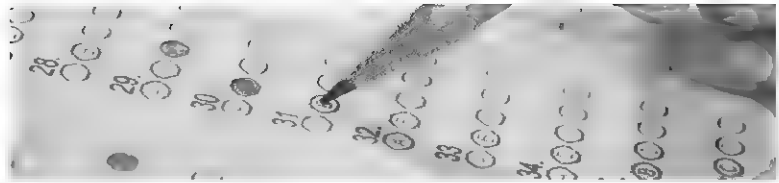
- A. Starfish
C. Catfish
- Q.53** Inner layers of the sponges are made up of which of the following?
A. Pinacocytes
C. Pinacoderm
B. Choanoderm
D. Choanocytes
- Q.54** The animals which belongs to division Radiata is/are?
A. Triploblastic
C. Radioblast
B. Diploblastic
D. All of these
- Q.55** The sponges in which sperms develop first are included in the category of?
A. Peritandrous
C. Protandrous
B. Protandrous
D. Protandrous
- Q.56** Lack of symmetry is identified in which group of animals?
A. Protozoa
C. Parazoa
B. Porozoa
D. Coelomates
- Q.57** Midgut in cockroach is a short narrow tube called which of the following?
A. Hepatic caeca
C. Stomach
B. Rectum
D. Gizzard
- Q.58** Which of the following statement about chordates is true?
A. They are protostomes
C. They lack a coelom
B. All chordates are vertebrates
D. Their anus is formed from the blastopore
- Q.59** Centipedes belong to class _____ of arthropoda.
A. Arachnida
C. Cephalopoda
B. Insect
D. Myriapoda
- Q.60** Which one is not the characteristic of Kingdom Animalia?
A. All animals are ingestive heterotrophs
B. It is largest kingdom
C. All animals are eukaryotes
D. All animals develop from the dissimilar gametes
- Q.61** What is the origin of the acoelomate gut?
A. Ectodermal
C. Endodermal
B. Mesodermal
D. None of these
- Q.62** Which of the following animals is not a protostome?
A. Cockroach
C. Sting ray
B. Butterfly
D. Earthworm
- Q.63** Radial symmetry is found in which of the following organisms?
A. Coelenterata and Platyhelminthes
C. Porifera and Coelenterata
B. Arthropoda and Mollusca
D. Coelenterata and Echinodermata
- Q.64** Which one of the following animals is not a tetrapod?
A. Snake
C. Mantis shrimp
B. Cow
D. Human
- Q.65** These animals have three germinal layers but no coelom:
A. Flat worms
C. Cnidarians
B. Round worms
D. Chordates
- Q.66** Which of the following are motile zooids in cnidarians?
A. Polyps
C. Both A and B
B. Medusae
D. None of these
- Q.67** The name animal is derived from what word?
A. Aname
C. Anemia
B. Anima
D. None of these
- Q.68** Which of the following are the first groups of invertebrates which have developed a closed circulatory system?
A. Nematodes
C. Arthropods
B. Annelids
D. Molluscs
- Q.69** Which statement is true about gastropods?
A. Body is bilaterally symmetrical



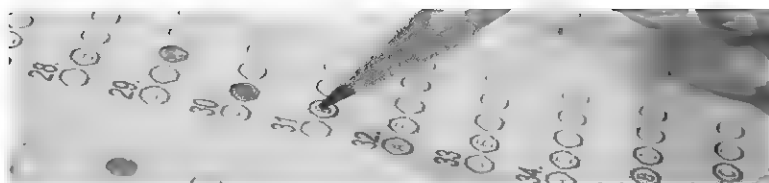
- B. Both aquatic and land species breathe through lungs
C. Triploblastic and acoelomates
D. All of the above
- Q.70 Excretory system of Platyhelminthes consists of which of the following?**
A. Nephridia **B. Flame cells**
C. Malpighian tubules D. Nephrons
- Q.71 Which of the following organism has an eel like body?**
A. Chondrichthyes B. Osteichthyes
C. Cyclostomata D. Both A and B
- Q.72 Which combination of class and its description is correct?**
A. Osteichthyes - a bony endoskeleton & gills covered by operculum
B. Reptilia - left aortic arch & internal fertilization
C. Nematoda - triploblastic & acoelomates
D. Cephalopods - dorsal nerve cord & bilateral symmetry
- Q.73 Ascaris is characterized by which of the following?**
A. Presence of true coelom and metamerism
B. Absence of true coelom and metamerism
C. Presence of true coelom but the absence of metamerism
D. Absence of true coelom but the presence of metamerism
- Q.74 Garden snail belongs to which class of Mollusca?**
A. Gastropoda B. Cephalopoda
C. Myriapoda D. None of them
- Q.75 The Venus flower basket is also known as which of the following?**
A. Sycon B. Leucosolenia
C. Spongilla **D. Euplectella**
- Q.76 S-band locomotion is characteristically seen in which of the following?**
A. Bony fish B. Fish like mammals
C. Cartilaginous fish **D. All of these**
- Q.77 Which group of animals is not a deuterostome?**
A. Echinodermata B. Arthropoda
C. Mollusca D. Both A and C
- Q.78 One similarity between annelids and arthropods:**
A. Closed circulatory system
B. Nitrogenous waste product is uric acid
C. Ventral nerve cord
D. None of the above
- Q.79 The pores through which water enters the sponge body are called:**
A. Osculum **B. Ostia**
C. Operculum D. None of the above
- Q.80 All of the following coelenterates show alternation of generation except?**
A. Hydra B. Obelia
C. Aurelia D. All of these
- Q.81 Both radial and bilateral symmetry is found in which of the following phylum?**
A. Protozoa B. Porifera
C. Echinodermata D. All of these
- Q.82 Phylum porifera is classified based on which of the following characteristic?**
A. Branching **B. Symmetry**
C. Spicules D. Reproduction
- Q.83 The outer body wall of sponges is made up of which cells?**
A. Choanocytes **B. Pinacocytes**
C. Mesenchymal cells D. Cnidocytes
- Q.84 Shell of egg is leathery in appearance in which of the following?**
A. Amphibians B. Prototherians
C. Birds **D. Reptiles**
- Q.85 Which of following system is segmentally arranged in annelids?**



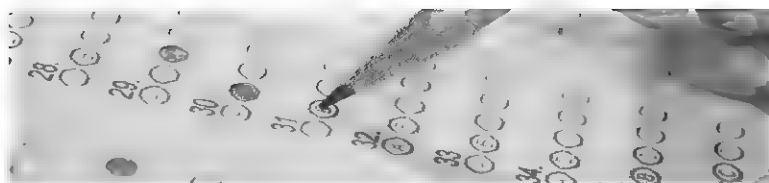
- A. Excretory system
C. Circulatory system
- Q.86 One of these animals is a prototherian:**
A. Green plants
C. Animals
B. Green algae
D. Both A and B
- Q.87 The only aquatic arthropods:**
A. Crustaceans
C. Myriapods
B. Arachnids
D. Gastropods
- Q.88 In sponge's fertilization takes place in which of the following?**
A. Ectoderm
C. Uterus
B. Endoderm
D. Mesenchyme
- Q.89 Aschelminthes is also known as which of the following?**
A. Protozoans
C. Protoctista ancestors
B. Eumetazoa
D. Nematodes
- Q.90 Which of the following are believed to have common origin with annelids?**
A. Nematodes
C. Molluscs
B. Arthropods
D. None of these
- Q.91 Which of the following combinations is incorrect?**
A. Nematoda - roundworms, pseudocoelomate
B. Arthropoda - coelom present, bilateral symmetry
C. Platyhelminthes - gastrovascular cavity, flatworms, acoelomate
D. Calcarea - gastrovascular cavity, coelom present
- Q.92 Which statement correctly describes the alimentary canal of Hydra?**
A. The alimentary canal is formed from the endodermal cells
B. The alimentary canal has a single opening
C. The alimentary canal is sac-like
D. All of these
- Q.93 Nematoda is a taxon of the ranking:**
A. Kingdom
C. Phylum
B. Sub-kingdom
D. Class
- Q.94 Of the following which one is not included in Protostomes?**
A. Arthropods
C. Annelids
B. Hemichordates
D. Molluscs
- Q.95 Flame cells in *Planaria* constitute the:**
A. Mechanoreceptors
C. Respiratory system
B. Reproductive system
D. Excretory system
- Q.96 All the animals of the grade radiata are which of the following?**
A. Unicellular
C. Both A and B
B. Triploblastic
D. Diploblastic
- Q.97 Which of the following is not found in series proterostomia?**
A. Annelida
C. Arthropoda
B. Mollusca
D. Echinodermata
- Q.98 The outer body wall of sponges is made up of which cells?**
A. Choanocytes
C. Mesenchymal cells
B. Pinacocytes
D. Cnidocytes
- Q.99 Water vascular system is present in coelom in which phylum:**
A. Echinodermata
C. Arthropoda
B. Annelida
D. Cnidaria
- Q.100 Which of the following is incorrect about annelida?**
A. Triploblastic organization
C. Segmentation
B. Bilateral symmetry
D. Pseudocoelom
- Q.101 The internal buds are known as which of the following?**
A. Spicules
C. Gemmules
B. Choanocytes
D. Both A and B
- Q.102 Cnidaria is characterized by which of the following?**
A. Tissue level of organization
C. Nematoblasts
B. Coelenteron
D. All of these



- Q.103** How is the body plan of a lobster similar to that of a whale?
A. Closed circulatory system
B. Mouth develops from the blastopore
C. A tubular digestive system with a mouth and an anus
D. The gut is not lined by coelomic epithelium
- Q.104** The nervous system of arthropods has:
A. A brain, a ventral nerve cord and several ganglia
B. A brain, a dorsal nerve cord and several ganglia
C. A brain, a dorsal and ventral nerve cord and several ganglia
D. A ventral nerve cord and several ganglia
- Q.105** Aschelminthes is also known as which of the following?
A. Eumetazoa
B. Protoctista
C. Ancestors
D. Nematodes
- Q.106** A sponge of Antarctica which is more than a meter tall is known as?
A. *Euplectella*
B. *Spongilla*
C. *Leucosolenia*
D. *Scolymastra joubini*
- Q.107** Gut in pseudocoelomates is made from which of the following?
A. Ectoderm
B. Mesoderm
C. Endoderm
D. All of these
- Q.108** Asymmetrical body is a feature of phylum:
A. Annelida
B. Arthropoda
C. Porifera
D. Cnidaria
- Q.109** Carapace is present in which class of arthropoda?
A. Arachnids
B. Insects
C. Crustaceans
D. All of these
- Q.110** All of the following are coelomates except which?
A. Deuterostomes
B. Hemichordates
C. Proterostomes
D. Aschelminthes
- Q.111** Which system is present in nematodes?
A. Sac - like digestive system
B. Circulatory system
C. Respiratory system
D. Tube - like digestive system
- Q.112** How are flat worms not similar to round worms?
A. They are both acoelomates
B. They are both worms
C. They are both triploblastic
D. They both show bilateral symmetry
- Q.113** Polychaeta have which of the following organs?
A. Tentacles
B. Palps
C. Eyes
D. All of these
- Q.114** *Periplaneta* (cockroach) belongs to which phylum?
A. Mollusca
B. Annelida
C. Echinodermata
D. Arthropoda
- Q.115** Radula is characteristic feature of:
A. Myriapods
B. Mollusca
C. Echinoderms
D. Cnidaria
- Q.116** The body of which of the following organism is globular?
A. Cake urchin
B. Brittle star
C. Sea cucumber
D. Sea urchin
- Q.117** Mantle in molluscs is present over which of the following regions?
A. Head
B. Dorsal muscular foot
C. Dorsal visceral foot
D. Both A and B
- Q.118** A hydrostatic skeleton is:
A. Arthropods
B. Fishes
C. Annelids
D. Nematodes
- Q.119** One similarity between annelids and arthropods:
A. Closed circulatory system
B. Nitrogenous waste product is uric acid
C. Ventral nerve cord
D. None of the above



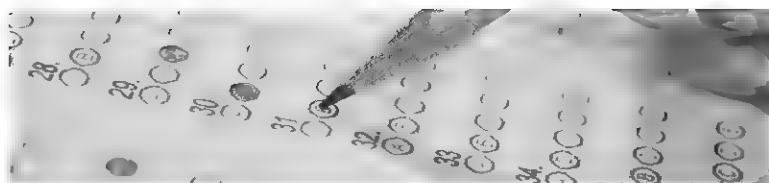
- Q.120** Animals like starfish have small groups of neurons in each arm connected to a ring of neurons in the centre.
This type of nervous system is called
A. Centralized nervous system
C. Diffuse nervous system
B. Partially centralized nervous system
D. Partially diffuse nervous system
- Q.121** Subkingdom parazoa includes:
A. Annelida
C. Porifera
B. Cnidaria
D. Protozoa
- Q.122** Which class has the largest number of animals?
A. Fishes
C. Insects
B. Reptiles
D. Mammals
- Q.123** Nephridia are the excretory organs of members of which phylum?
A. Arthropoda
C. Annelida
B. Cnidaria
D. Mollusca
- Q.124** Aquatic arthropods respire through which of the following?
A. Gills
C. Book lungs
B. Spiracles
D. Both A and B
- Q.125** Vertebrates belong to phylum chordata because:
A. They have a vertebral column
B. The brain is enclosed by the skull
C. The embryos have gills
D. The body develops from three germinal layers
- Q.126** Coelom that develops from the archenteron as outpouching is?
A. Pseudocoelom
C. Schizocoelom
B. Enterocoelom
D. Both a and b
- Q.127** Aquatic arthropods belonging to this class breathe through gills:
A. Insects
C. Crustaceans
B. Arachnids
D. None of the above
- Q.128** Salamander belongs to which of the following class?
A. Pisces
C. Reptiles
B. Aves
D. Amphibians
- Q.129** The best function of coelom is described as:
A. To increase the size of the animals
B. To help in the functioning of reproductive system
C. To provide space for the development of organs and system
D. All of these
- Q.130** Most multicellular organisms are which of the following?
A. Haploid
C. Single nucleus
B. Diploid
D. None of these
- Q.131** Identify the characteristic of acoelomates?
A. Absence of mesoderm
B. Absence of brain
C. Coelom that is incompletely lined with a mesoderm
D. Solid body without a cavity surrounding internal organs
- Q.132** Nervous system of nematodes consists of which of the following?
A. Ventral nerve cord
C. Lateral nerve cord
B. Dorsal nerve cord
D. All of these
- Q.133** Which among the following is a diploblastic organism?
A. Hydra
C. Squid
B. Crabs
D. Earthworm
- Q.134** Which of the following is an example of a tetrapod?
A. Flesh fly
C. Blue-ringed octopus
B. Tarantula
D. Hummingbird
- Q.135** In most triploblasts after embryonic development the three layers are represented as?
A. Separate layers of cells
C. Their functions in body
B. Structures formed from them
D. Structures associated with them



- Q.136** Lack of symmetry is identified in which group of animalia:
A. Protozoa
C. Parazoa
B. Poroza
D. Coelomates
- Q.137** Layer absent in diploblastic organisms:
A. Endoderm
C. Mesoderm
B. Epidermis
D. Ectoderm
- Q.138** _____ do not perform photosynthesis:
A. Animals
C. Pine tree
B. Bacteria
D. *Spirogyra*
- Q.139** It is a detritus feeder:
A. Leech
C. Hook worm
B. Earthworm
D. Pin worm
- Q.140** Opossum, Kangaroo and Tasmanian wolf are examples of:
A. Metatheria
C. Eutheria
B. Prototheria
D. None of the above
- Q.141** Most flatworms are:
A. Endoparasite
C. Pesuodparasite
B. Ectoparasite
D. External parasite
- Q.142** Which of the following system is segmentally arranged in annelids?
A. Excretory system
C. Nervous system
B. Circulatory system
D. Digestive system
- Q.143** Which of the followings are characteristics of mollusca?
A. Segmented body
C. Muscular foot
B. Closed circulatory system
D. All of the above
- Q.144** Polychaeta are present in:
A. Echinodermata
C. Arthropoda
B. Annelida
D. Mollusca
- Q.145** One of these animals is prototheria:
A. Alligator
C. Penguin
B. Spiny ant eater
D. Porcupine
- Q.146** In sponges fertilization takes place in which of the following?
A. Mesenchyme
C. Ectoderm
B. Endoderm
D. UterusWw
- Q.147** Canal system in sponges develop due to which of the following?
A. Porous walls
C. Folding of inner walls
B. Reproduction
D. Gastrovascular system
- Q.148** It is not a characteristics of kingdom animalia:
A. All animals are Ingestive heterotrophs
B. All animals are eukaryotes
C. It is largest kingdom
D. All animals develop from two dissimilar gametes
- Q.149** Which one is non-cellular in most cases in animals?
A. Chlorenchyma
C. Sclerenchyma
B. Mesoderm
D. Mesenchyme
- Q.150** *Sycon* is an example of:
A. Platyhelminthes
C. Protozoa
B. Annelida
D. Porifera
- Q.151** Pinworm is a common used for which if the following?
A. *Rhabditis*
C. *Taenia solium*
B. *Ancylostoma duodenale*
D. Enterobius vermicularis
- Q.152** Which of the following are modern day descends of theropoda dinosaurs?
A. Birds
C. Panther
B. Lions
D. Bears
- Q.153** Chitinous setae are locomotary organs of annelids which are present on:
A. Cell wall
B. Prostomium



- C. Nucleolus
D. Parapodia
- Q.154 Porcupine is a mammals because:**
A. Scales on its body are modified as spines for protection against predators
B. It lays eggs and has mammary glands
C. Fur on its body is modified as spines and it is warm blood
D. None of the above
- Q.155 It is considered a missing link between reptiles and birds:**
A. Pterandon
B. Avimimus
C. Caudipteryx
D. Archaeopteryx
- Q.156 Which is not a mammal?**
A. Whale
B. Walrus
C. Shark
D. Seal
- Q.157 Which of them excretes in form of uric acid?**
A. Birds
B. Human
C. Frog
D. None of these
- Q.158 Which of the following class of mammals is believed to have strong resemblance with reptile?**
A. Metatheria
B. Eutheria
C. Prototheria
D. Both eutheria and prototheria
- Q.159 Difference between chordates and hemichordates are:**
A. Chordates are invertebrates
B. Chordates have well developed nervous system
C. Chordates have brain enclosed in skull
D. Chordates have symmetrical body
- Q.160 Which phylum is considered the largest?**
A. Arthropoda
B. Mollusca
C. Annelida
D. Platyhelminthes
- Q.161 Which of the following is ancient fossil fuel?**
A. Fish
B. Reptile
C. Bird
D. Amphibian
- Q.162 In arthropods, body cavity is in the form of:**
A. Coelom
B. Haemocoel
C. Pseudocoelom
D. Enteron
- Q.163 Largest invertebrate is:**
A. Squid
B. Octopus
C. Sycon
D. Jelly fish
- Q.164 Jelly fish belong to:**
A. Deuterostomes
B. Proterostomes
C. Triploblastic
D. Diploblastic
- Q.165 Placenta develops in embryonic state in:**
A. Prototheria
B. Metatheria
C. All mammals
D. Eutheria
- Q.166 Largest vertebrates are:**
A. Elephants
B. Whales
C. Sharks
D. Anacondas
- Q.167 Which of the following pigment present in mollusca?**
A. Haemocyanin
B. Haemoglobin
C. Myoglobin
D. None
- Q.168 Ancestors to animals:**
A. Protozoan
B. Algae
C. Slime molds
D. Bacteria
- Q.169 Which of the following are not amniotes?**
A. Mammals and birds
B. Birds and reptiles
C. Reptiles and amphibians
D. Amphibians and fishes
- Q.170 Cephalothorax is characteristic of:**



A. Arthropods
C. Gastropods

B. Myriapods
D. None of these

Q.171 Arachnids have simple eyes. Which means:

A. Every eye has a single lens
C. All eyes have a single lens

B. Every eye has a simple lens
D. All eyes have simple lens

Q.172 Rhodophyta belong to:

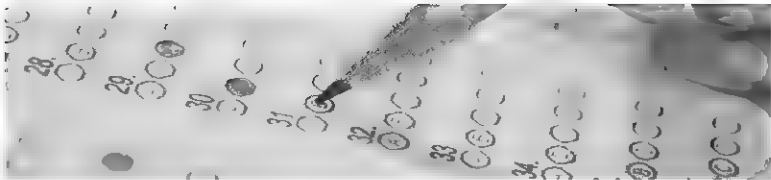
A. Algae, Protista
C. Zooflagellates, Protista

B. Zygomycota, Fungi
D. Slime molds, Protista

Q.173 Many _____ expel large amount of water by special structures called contractile vacuoles:

A. Porifera
C. Echinoderm

B. Fish
D. Protozoa



ANSWER KEY

DIVERSITY AMONG ANIMALS

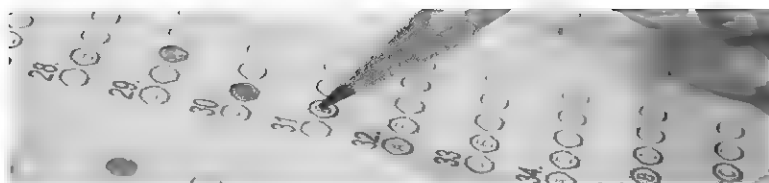
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2	A	22	D	42	D	62	C	82	B	102	C	122	C	142	A	162	B
3	D	23	A	43	A	63	D	83	B	103	C	123	C	143	C	163	A
4	A	24	A	44	D	64	C	84	D	104	A	124	A	144	B	164	D
5	C	25	C	45	C	65	A	85	A	105	D	125	D	145	B	165	D
6	A	26	D	46	B	66	B	86	C	106	D	126	B	146	A	166	B
7	D	27	A	47	C	67	B	87	A	107	C	127	C	147	C	167	A
8	A	28	C	48	A	68	B	88	D	108	C	128	D	148	D	168	A
9	B	29	D	49	D	69	A	89	B	109	A	129	C	149	D	169	D
10	C	30	B	50	A	70	B	90	C	110	D	130	B	150	D	170	A
11	C	31	D	51	C	71	C	91	D	111	D	131	D	151	D	171	B
12	D	32	C	52	D	72	A	92	D	112	A	132	D	152	A	172	A
13	B	33	A	53	B	73	C	93	C	113	B	133	A	153	D	173	D
14	C	34	B	54	B	74	A	94	B	114	D	134	D	154	B		
15	C	35	D	55	D	75	D	95	D	115	B	135	B	155	D		
16	C	36	B	56	C	76	D	96	D	116	A	136	C	156	C		
17	B	37	A	57	A	77	A	97	D	117	C	137	C	157	A		
18	D	38	C	58	D	78	C	98	B	118	C	138	A	158	C		
19	D	39	D	59	D	79	B	99	A	119	C	139	B	159	B		
20	A	40	A	60	D	80	A	100	D	120	D	140	A	160	A		



ENZYMES

Introduction/Characteristics of Enzymes

- Q.1** The reaction will proceed faster if the activation energy is?
A. High **B. Low**
C. Remains same D. None of these
- Q.2** The energy required to start a reaction is called?
A. Startup energy B. Initial energy
C. Point energy **D. Activation energy**
- Q.3** An enzyme which requires a biological change in order to become active is called?
A. Transferase **B. Zymogen**
C. Hydrogenase D. Trypsin
- Q.4** An enzyme without its cofactor is called:
A. Coenzyme **B. Apoenzyme**
C. Holoenzyme D. Proenzyme
- Q.5** If the non-protein part of enzyme is covalently bonded to the enzyme it is known as?
A. Coenzyme B. Activator
C. Cofactor **D. Prosthetic group**
- Q.6** Small organic, non-protein part that helps in enzyme reactions:
A. Co-factor B. Catalyst
C. Activator D. Prosthetic group
- Q.7** An activated enzyme made up of a polypeptide with its cofactor is:
A. Substrate **B. Holoenzyme**
C. Coenzyme D. Apoenzyme
- Q.8** Nicotinamide adenine dinucleotide is an example of:
A. Coenzyme B. Holoenzyme
C. Cofactor D. Apoenzyme
- Q.9** Co-enzyme require:
A. Vitamins B. Proteins
C. Fats D. Carbohydrate
- Q.10** Which of the following form weak linkage with enzyme?
A. Co-factor B. Activator
C. Co-enzyme D. Activator
- Q.11** Co-factors are divided into groups:
A. 2 **B. 3**
C. 4 D. 4
- Q.12** The substrate binds to specific region of enzyme called?
A. Key **B. Active site**
C. Hyperactive site D. None of these
- Q.13** All enzymes are:
A. Globular proteins B. Fibrous proteins
C. Glycoproteins D. Lipoproteins
- Q.14** What does the active site of the enzyme determine?
A. Looks like a lump projection from the surface of an enzyme
B. Forms no chemical bond with substrate
C. Never changes
D. Determines by its structure the specificity of an enzyme
- Q.15** Enzymes showing substrate specificity are specific to how many substrates?
A. 1 B. 3
C. 2 D. 4
- Q.16** Which term is used to refer to an inactive enzyme precursor?
A. Apoenzyme B. Null enzyme
C. Zymogen D. Inhibitor
- Q.17** Catalysts that increase the rate of biological chemical reaction are called:
A. Proteins B. Vitamins
C. Enzymes D. Minerals
- Q.18** Which of the following best describes a coenzyme?



- A. Covalently bonded non-protein part of an enzyme
B. Cofactor consists of metal ions
C. Loosely bonded non-protein part of an enzyme
D. Both A and B
- Q.19 Which statement about enzyme is incorrect?**
A. Some of them consist solely of protein with no non protein part
B. They catalyze a chemical reaction without being utilized
C. They without their cofactor are called apoenzyme
D. All enzymes are fibrous proteins
- Q.20 Active form of an enzyme:**
A. Coenzyme
C. Holoenzyme
B. Apoenzyme
D. Proenzyme
- Q.21 A cofactor made of inorganic ion which is detachable is called?**
A. Prosthetic group
C. Activator
B. Coenzyme
D. Cofactor
- Q.22 Enzymes are globular proteins because:**
A. They have a primary structure
C. They have a tertiary structure
B. They have a secondary structure
D. All of the above
- Q.23 A small organic, non-protein molecule that carries chemical groups between enzymes is:**
A. Cofactor
C. Substrate
B. Catalyst
D. Coenzyme
- Q.24 Biological molecules which catalyze a biochemical reaction and remain unchanged after completion of reaction are called?**
A. Cofactor
C. Activator
B. Coenzymes
D. Enzymes
- Q.25 Enzymes bind with chemical reactant known as:**
A. Product
C. Substrate
B. Reactant
D. All of these
- Q.26 Which of the following vitamin acts as a coenzyme**
A. Vitamin b
C. Vitamin b₂
B. Vitamin b
D. All of these
- Q.27 If the non-protein part of enzyme is covalently bonded to the enzyme it is known as?**
A. Coenzyme
C. Cofactor
B. Prosthetic group
D. Activator
- Q.28 Enzyme reacts with substrate to form:**
A. Product
C. Binding site
B. Active site
D. Catalytic site
- Q.29 Enzymes are _____ in nature:**
A. Carbohydrates
C. Nucleic acids
B. Lipids
D. Proteins
- Q.30 Which type of bond are never formed when substrate fits into active site of enzyme?**
A. Hydrogen bonds
C. Covalent linkages
B. Ionic interactions
D. Hydrophobic interactions
- Q.31 The mechanism of enzyme activation is referred to as:**
A. Activation energy
C. Enzyme specificity
B. Catalysis
D. Denaturation
- Q.32 The specificity of enzyme structure depends upon:**
A. Active site
C. Globe shape
B. Allosteric site
D. All of these
- Q.33 Catalytic activity takes place at:**
A. Active site
C. Regulatory site
B. Allosteric site
D. All of these
- Q.34 Which statement about active site is not true?**
A. Active site is of spherical shape
B. Active site is nonspecific
C. Active site contains few amino acids
D. Active site converts substrate into product



- Q.35** Type of bond present between enzyme and prosthetic group:
A. Hydrogen **B. Covalent**
C. Ionic D. Coordinate covalent
- Q.36** Which one forms the raw material for coenzymes?
A. Vitamins B. Carbohydrates
C. Lipids D. Proteins
- Mechanism of action of enzymes**
- Q.37** The lock and key model of enzyme action was proposed by:
A. Louis Pasteur **B. Emil Fischer**
C. Daniel Koshland D. Urey Miller
- Q.38** The complex that forms when a substrate binds to enzyme is called:
A. Enzyme-substrate complex B. Enzyme complex
C. Substrate complex D. Structural complex
- Q.39** Enzymes do not affect:
A. Substrate concentration B. Product concentration
C. Both A and B **D. None**
- Q.40** Who proposed lock and key model of enzyme activity?
A. Emil Fischer B. Daniel Koshland
C. Fredrick Sanger D. James Watson
- Q.41** In the lock and key model of enzyme activity, the substrate acts as the:
A. Key **B. Lock**
C. Both A and B D. None of the above
- Q.42** Enzymes work by which of the following?
A. Increasing the activation energy **B. Reducing the activation energy**
C. Making exergonic reactions endergonic D. Making endergonic reactions exergonic
- Q.43** How many models are present for enzyme-substrate complex or reaction?
A. 3 **B. 2**
C. 4 D. 5
- Q.44** Which statement is incorrect about Lock and Key Model?
A. Specific enzyme can transform only a specific substrate
B. Active site of an enzyme is a non-flexible structure
C. Active site does not change before during or even after the reaction
D. It explains the mechanism of every chemical reaction
- Q.45** Which types of bond are never formed when a substrate fits into the active site of an enzyme?
A. Hydrogen bonds B. Ionic interactions
C. Hydrophobic interactions **D. Covalent linkages**
- Q.46** Koshland in 1959 proposed the modified form of which of the following?
A. Unit membrane model B. Fluid mosaic model
C. Reflective index model **D. Induced fit model**
- Q.47** Induced fit model was introduced by Koshland in which of the following year?
A. 1960 B. 1961
C. 1959 D. 1966
- Q.48** Lock and key model was proposed by:
A. Koshland **B. Fischer**
C. Krebs D. Darwin
- Q.49** Which of the following is false about concerning enzymes?
A. Substrates must bind the enzyme's active site in order to initiate its effects
B. Enzymes increase both the forward rate and reverse rate of a reaction
C. Enzymes are not destroyed in a reaction and can be used in the same reaction countless times
D. Enzymes increase the amount of product created in a reaction
- Q.50** Number of substrate molecules converted into product by one molecule of enzyme active site per unit time is called?
A. Turnover number B. Substrate number
C. Reaction number D. None
- Q.51** According to the induced fit model, what happens when an enzyme-substrate complex is formed?



A. The contact between the substrate and the enzyme causes a change in the shape of the active site

B. The shape of the substrate and the shape of the active site is complementary to each other

C. The substrate fits into the active site and forms bonds with the amino acids at the active site

D. All of these

Q.52 What affect do enzymes have on the activation energy of a reaction?

A. Increases

B. Decreases

C. No affect

D. Increases or decreases depending upon individual enzyme

Q.53 While bound to the active site, the substrate is converted into which of the following?

A. Complex

B. Substrate of high energy

C. Product of reaction

D. Both A and B

Q.54 The primary function of cofactors is to?

A. Assist in enzyme synthesis

B. Assist in enzyme inhibition

C. Assist in enzyme activity

D. Both a and b

Q.55 In enzyme catalytic reaction the substrate is first converted to a high energy state called?

A. Transition state

B. High energy state

C. Activation state

D. Breaking point

Q.56 Allosteric enzymes consist of multiple:

A. Inhibitors

B. Polypeptide chains

C. Active sites

D. Temperature ranges

Q.57 Functions of enzymes include all of the following except:

A. Lessening the time required for a reaction to take place

B. Shifting substrates into more favorable positions in the active site

C. Decreasing the activation energy of a reaction

D. Shifting the equilibrium of a reaction

Factors effecting rate of enzyme action

Q.58 Upon increasing the temperature the shape of enzyme's active site?

A. Remains same

B. Changes

C. Adopts a geometric conformation

D. Denatures

Q.59 The optimum pH for enzyme arginase is which of the following?

A. 9

B. 9.3

C. 9.7

D. 10

Q.60 The optimum pH for the functioning of the enzyme pepsin is?

A. 2

B. 3

C. 4

D. 5

Q.61 If we add more substrate to already occurring enzymatic reaction and it has no effect on the rate reaction, the process is called?

A. Denaturing

B. Saturation

C. Composition

D. Inhibition

Q.62 pH of salivary amylase is:

A. 6.8

B. 7.60

C. 2.00

D. 5.50

Q.63 It works in acidic medium:

A. Arginase

B. Pancreatic lipase

C. Catalase

D. Enterokinase

Q.64 Extreme change in pH results in which of the following?

A. Change in ionization of amino acids at the active site of the enzyme

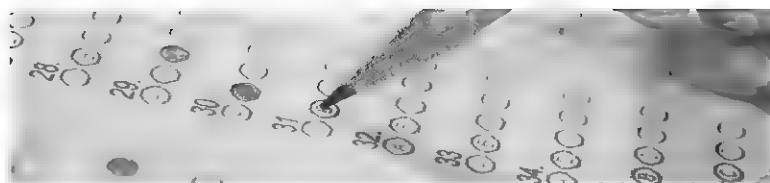
B. Change in the ionization of the substrate

C. Increase in the reaction rate

D. Denaturation of the enzyme

Q.65 What is meant by optimum temperature of an enzyme?

A. The temperature at which the primary structure of an enzyme remains intact



- B. The temperature at which an enzyme makes the maximum amount of product
C. The temperature at which an enzyme may be more affected by an inhibitor
D. The temperature at which an enzyme makes the least amount of product
- Q.66** Rate of reaction is double for rise of every _____.
A. 20 °C
B. 10 °C
C. 30 °C
D. 20 °C
- Q.67** Which of the following strategies of enzymatic inhibition is used by noncompetitive inhibitors?
A. Bind to substrate so that it cannot bind to the active site
B. Target the enzyme for destruction using a protease
C. Bind to the active site and prevent substrate from binding
D. Bind to an allosteric site to cause a conformational shift in the enzyme
- Q.68** If more substrate to an already occurring enzymatic reaction is added more enzyme activity is seen because?
A. There is probably more substrate present than there is enzyme
B. There is probably more product present than either substrate or enzyme
C. The enzyme substrate complex is probably failing to form during the reaction
D. There is probably more enzyme available than there is substrate
- Q.69** The optimum pH for the functioning of pancreatic lipase is?
A. 9
B. 8
C. 7
D. 6
- Q.70** A researcher has designed a new type of inhibitor that binds at the active site of an enzyme. What type of inhibition does this molecule display?
A. Uncompetitive inhibition
B. Competitive inhibition
C. Noncompetitive inhibition
D. All of these
- Q.71** Which of the following changes could lead to loss of enzymatic function?
A. Decrease in activation energy of the reaction
B. Increase in enzyme concentration
C. Change in overall enthalpy of the reaction
D. Increase in pH of the reaction
- Q.72** Which statement correctly describes why enzyme activity increases with increased enzyme concentration?
A. Collisions between enzyme and substrate molecules increase because of increased kinetic energy
B. Collisions between enzyme and substrate molecules increase because of increased heat energy
C. Collisions between enzyme and substrate molecules increase because of more active sites are available
D. Collisions between enzyme and substrate molecules increase because more substrate molecules are available
- Q.73** The rate of reaction of enzyme directly depends upon which of the following?
A. Low temperature
B. Amount of enzyme present at a specific time at unlimited substrate concentration
C. Maximum pH level
D. Nature of substrate
- Q.74** The enzyme-substrate complex is formed in which part of the enzyme molecule?
A. Binding site
B. Allosteric site
C. Catalytic site
D. None of the above
- Q.75** Which step, causes activation of catalytic site of an enzyme?
A. Change in pH of the surroundings
B. Change in the charge of the active site
C. Change in temperature
D. Formation of enzyme substrate site
- Q.76** If the concentration of enzyme is kept constant and amount of substrate is increased a point is reached where increase in substrates concentration does not affect the reaction rate because of?
A. Enzymes get denatured at higher substrate concentration



- B. Rate of reaction is indirectly proportional to substrate concentration at this point
C. All the active sites on enzyme molecule are occupied
 D. All of these
- Q.77 What is the optimum temperature for working of enzymes in human body?**
 A. 32°C B. 40°C
C. 37°C D. 35°C
- Q.78 In acidic medium, amino acids carry positive charge and acts as:**
 A. Acid **B. Base**
 C. Neutral D. None of these
- Q.79 If we increase the concentration of substrate then increase in the enzyme activity is due to which of the following?**
A. There is sufficient concentration of enzyme
 B. There is sufficient concentration of substrate
 C. Active sites are not working properly
 D. None of these
- Q.80 When we increase the pH then, enzyme reactivity is retarded due to:**
A. Tertiary structure of enzyme is destroyed
 B. Primary structure is destroyed
 C. Active sites get blocked
 D. Allosteric modulation
- Q.81 At low enzyme concentration, optimum pH and temperature, rate of reaction can be increased by:**
 A. Increased substrate concentration B. Increasing pH
 C. Increasing temperature **D. Increasing enzyme concentration**
- Q.82 Number of substrate molecules converted into product by one molecule of enzyme active site per unit is called:**
A. Turn over number B. Reaction number
 C. Substrate number D. None of the above
- Enzyme inhibition**
- Q.83 The effect of competitive inhibitor on enzyme activity is such that it affects which of the following?**
 A. Increases enzyme activity B. Doesn't change enzyme activity
C. Decreases enzyme activity D. None of these
- Q.84 What is the characteristic of a non-competitive inhibitor?**
 A. Always binds at the active site
 B. Adding more substrate reduces the effects of inhibition
 C. Sometimes binds at the active site
D. Adding more substrate does not reduce the effects of inhibition
- Q.85 Reversible inhibitors form weak linkages with which of the following?**
A. Enzyme B. Reactant
 C. Product D. Substrate
- Q.86 Inhibitors which block the enzyme by forming weak bond are called:**
A. Competitive inhibitors B. Non-competitive inhibitors
 C. Irreversible inhibitors D. Both A and B
- Q.87 Reversible inhibitors form weak linkages with which of the following?**
A. Enzyme B. Reactant
 C. Product D. Substrate
- Q.88 The end product of an enzymatic reaction inhibits formation of product in an earlier step. This type of enzymatic regulation is known as?**
 A. Allosteric regulation B. Negative regulation
 C. Metabolic pathway loop **D. Feedback inhibition**
- Q.89 In uncompetitive inhibition, the inhibitor binds with:**
A. Enzyme B. Substrate
 C. ES-complex D. All of these
- Q.90 In mixed inhibition, the allosteric affects:**
 A. Shape of substrate B. Shape of inhibitor
C. Shape of enzyme D. None of these
- Q.91 The non-substrate molecules that bind to the allosteric sites are called?**
A. Inhibitors B. Reactants



- Q.92 C. Allosteric substrates D. Allosteric modulators
A chemical substance which can react (in place of substrate) with the enzyme but is not transformed into product/s and thus blocks the active site temporarily or permanently is called?
A. Coenzyme B. Blocker
C. Inhibitor D. Cofactor
- Q.93 Malonic acid is an example of which type of inhibitors?
A. Malonic acid is an example of which type of inhibitors?
B. Reversible inhibitor
C. Non-competitive inhibitor
D. Competitive inhibitor
- Q.94 In non-competitive inhibition, the quantity which remains same as the reaction proceed is?
A. V_{max} **B. K_m**
C. K_o D. V_o
- Q.95 A substance which binds at the active site of the enzyme but does not result in the formation of the products is called:
A. Irreversible inhibitor B. Reversible inhibitor
C. Non-competitive inhibitor **D. Competitive inhibitor**
- Q.96 An inhibitor is added, disrupting the function of a particular enzyme. The experimenter adds more substrate, and enzyme function increases again. These results indicate the involvement of what type of inhibitor?
A. Non-competitive B. Uncompetitive
C. Allosteric **D. Competitive**
- Q.97 What is meant by enzyme denaturation?
A. Peptide bonds between amino acid residues are broken
B. The enzyme loses its secondary structure
C. The enzyme loses its tertiary structure
D. All of the above
- Q.98 The effect of competitive inhibitor on enzyme activity is such that it affects which of the following?
A. Increases enzyme activity B. Doesn't change enzyme activity
C. Decreases enzyme activity D. None of these
- Q.99 The non-substrate molecules that binds to the allosteric sites are called?
A. Inhibitors B. Reactants
C. Allosteric substrates D. Allosteric modulators
- Q.100 Which of the following best describes competitive inhibitors?
A. Do occupy active site
B. Destroy the structure of enzyme
C. Resemble structurally with substrate
D. None of the above
- Q.101 _____ is a competitive inhibitor of succinic dehydrogenase.
A. Malonic acid B. Malic acid
C. Fumaric acid D. Acetic acid
- Q.102 In competitive inhibition, a thing that binds to enzyme active site are?
A. Substrate B. Catalyst
C. Inhibitors D. Both A and B
- Q.103 Feedback inhibition in most metabolic pathways involves which type of enzymes?
A. Holoenzymes **B. Allosteric enzymes**
C. Coenzymes D. Apoenzyme
- Q.104 These form weak linkages with enzymes:
A. Irreversible inhibitors **B. Reversible inhibitors**
C. Both A and B D. None
- Q.105 In uncompetitive inhibition, the inhibitor binds with:
A. Enzyme B. Substrate
C. ES complex D. All of these
- Q.106 An allosteric enzyme will have:
A. Many active sites B. Many substrates



- Q.107** **C. Many binding sites**
In mixed inhibition, the inhibitor binds to:
A. Allosteric site
C. Binds to substrate
D. No binding site
B. Active site
D. Does not bind to enzyme
- Q.108** **Competitive inhibitors _____ enzyme activity.**
A. Decrease
C. Does not affect
B. Increase
D. None
- Q.109** **Structure of enzyme is altered by:**
A. Competitive inhibitor
C. Irreversible inhibitor
B. Non- competitive inhibitor
D. Reversible inhibitor
- Q.110** **In competitive inhibition, two things attached to enzyme's active site are:**
A. Inhibitor
C. Both A and B
B. Substrate
D. None of these
- Q.111** **The structure of an enzyme is altered by which of the following inhibitors?**
A. Reversible inhibitor
C. Non-competitive inhibitor
B. Competitive inhibitor
D. Irreversible inhibitor
- Out of the Syllabus**
- Q.112** **This enzyme is used to cut DNA molecule in rDNA technology**
A. Ligase
C. Ribonuclease
B. Phosphatase
D. Restriction enzyme
- Q.113** **Restriction endonucleases found in**
A. Viruses
C. Eukaryotes
B. Bacteria
D. All of these
- Q.114** **Antibodies can be digested by using which of the following types of enzymes?**
A. Lipase
C. Amylase
B. Protease
D. Polymerase
- Q.115** **Ligases help in which of the following reactions?**
A. Splitting of two molecules
C. **Joining of molecules**
B. Oxidation of molecules
D. Both A and B
- Q.116** **What type of enzymes is involved in biological oxidation?**
A. kinases
C. Polymerases
B. Dehydrogenases
D. Phosphatases
- Q.117** **Which of the following is not a class of enzyme?**
A. Ligase
C. Hydrolase
B. Isomerase
D. Pyrimidine complex
- Q.118** **Enzymes which are involved in transfer of electrons are known as:**
A. Oxidases
C. Hydrolyses
B. Dehydrogenase
D. Both A and B
- Q.119** **The following enzymes are regulated by calcium ions:**
A. DNA polymerase
C. Adenylate cyclase
B. Nitric oxide synthetase
D. Phosphoprotein phosphatase
- Q.120** **Enzyme which helps in changing the shape of molecule is called:**
A. Ligases
C. Hydrolyses
B. Dehydrogenases
D. Isomerases
- Q.121** **Phosphoglyceromutases are example of:**
A. Lyases
C. Ligases
B. Hydrolases
D. Transferases



ANSWER KEY

ENZYMES

1	B	21	C	41	B	61	B	81	D	101	A	121	D
2	D	22	C	42	B	62	A	82	A	102	C		
3	B	23	D	43	B	63	D	83	C	103	B		
4	B	24	D	44	D	64	D	84	D	104	B		
5	D	25	C	45	D	65	B	85	A	105	C		
6	A	26	D	46	D	66	B	86	A	106	C		
7	B	27	B	47	C	67	D	87	A	107	A		
8	A	28	A	48	B	68	A	88	D	108	A		
9	A	29	D	49	B	69	A	89	A	109	B		
10	C	30	D	50	A	70	B	90	C	110	B		
11	B	31	B	51	A	71	D	91	A	111	D		
12	B	32	A	52	B	72	C	92	C	112	D		
13	A	33	A	53	C	73	B	93	D	113	B		
14	D	34	B	54	C	74	A	94	B	114	B		
15	A	35	B	55	A	75	D	95	D	115	C		
16	C	36	A	56	B	76	C	96	D	116	B		
17	C	37	B	57	B	77	C	97	D	117	D		
18	C	38	A	58	D	78	B	98	C	118	D		
19	D	39	D	59	C	79	A	99	A	119	B		
20	C	40	A	60	A	80	A	100	C	120	D		



EVOLUTION

Concepts of evolution

- Q.1** The process that has transformed life on earth from its earliest forms to vast diversity is?
 A. Mutation
 B. Evolution
 C. Migration
 D. Genetic drift
- Q.2** Concept of evolution was first presented by which of the following scientists?
 A. Lamarck
 B. Aristotle
 C. Wallace
 D. Darwin
- Q.3** Earliest life form on earth is:
 A. Virion
 B. Viroid
 C. Prion
 D. None
- Q.4** During Aristotle time, it was thought that:
 A. Organisms ranged from simple to complex
 B. One type of organism give rise to another type of organism
 C. Both A and B
 D. All living things specially created by nature
- Q.5** *Methanopyrus kandleri* is an organism which lives in a hydrogen-carbon dioxide environment, and was first discovered in a hydrothermal vent where temperatures reached 230°F. What sort of organism is this?
 A. Protist
 B. Cyanobacteria
 C. Archaea
 D. Bacteria
- Q.6** Flagella might have arisen through the ingestion of which of the following?
 A. Cyanobacteria
 B. Chlamydomonas
 C. Paramecium
 D. Spirochetes
- Q.7** Carolus Linnaeus was believer of which of the following?
 A. Special creation
 B. Catastrophism
 C. Natural selection
 D. Inheritance of acquired characters
- Q.8** Which of the following is not an example of evidence supporting the endosymbiotic theory?
 A. Mitochondria and other plastids multiply by binary fission
 B. Mitochondria contain their own DNA, which is a single circular chromosome
 C. Mitochondria have their own ribosomes, which are 70s
 D. None of these
- Q.9** Two populations of the same species over time grow distant from one another. At what point will these two populations be considered different species?
 A. When the populations begin to eat different foods
 B. When there is a physical barrier, such as a river
 C. When the two populations have not been in contact with one another for two hundred years
 D. When they are no longer able to interbreed
- Q.10** Which scientist does not match his achievements in the following options?
 A. Lamarck published his theory of evolution
 B. Lyell published principles of geology
 C. Malthus published essay on principle of population
 D. Cuvier published papers on inheritance
- Q.11** The process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth:
 A. Evolution
 B. Development
 C. Growth
 D. None of the above
- Q.12** He explained earth's history by catastrophism:
 A. Cuvier
 B. Lyell
 C. Malthus
 D. Lamarck
- Q.13** Eukaryotes evolved by prokaryotes through:



- A. Commensalism
C. Predation
- Q.14 Who wrote an essay on population?**
A. Malthus
C. Mendel
- Q.15 Lamarck was in-charge of the Natural History Museum in:**
A. North America
C. England
- Inheritance of acquired characteristics**
- Q.16 Which condition can be explained by Lamarckism?**
A. How giraffes got their long neck
C. How humans became bipedal
- Q.17 Which of the following scientists hypothesized that organisms can pass down acquired traits during their lifetimes?**
A. Lamarck
C. Darwin
- Q.18 Lamarck's ideas on biological evolution contained correct and incorrect notions. Which of his ideas is correct?**
A. Acquired traits can be passed on to offspring
B. Living forms become perfect with time
C. Nervous fluids are passed on from generation to generation
D. Evolution is related to changes in adaptation to the environment
- Q.19 The idea of inheritance of acquired characteristics was given by:**
A. Lamarck
C. Aristotle
- Q.20 What are parts of Lamarck's theory of evolution?**
A. Individuals lose traits that they don't need
B. Acquired characteristics are heritable
C. Individuals gain characteristics they need
D. All of these
- Q.21 Which of the following are important points of Lamarck's theory?**
A. Use and disuse of organs
C. Natural selection
- Q.22 Which scientists gave postulate that giraffes have long necks because they wanted to eat the leaves of tall trees?**
A. Watson and Crick
C. Darwin
- Q.23 Who hypothesized that organisms evolved through inheritance of acquired characters?**
A. Darwin
C. Malthus
- Q.24 Which of the following can be described by Lamarckism?**
A. How giraffe got their long neck?
C. How humans became bipedal?
- Q.25 Use and disuse organ theory was proposed by:**
A. Lamarck
C. Wallace
- B. Symbiosis
D. All of the above
- B. Darwin
D. Wallace
- B. Paris
D. Wales
- B. How humans lost their tail
D. All of these
- B. Linnaeus
D. Mendel
- B. Darwin
D. Lyell
- B. Inheritance of acquired characters
D. Both A and B
- B. Lamarck
D. All of these
- B. Hutton
D. Lamarck
- B. How humans lost their tails?
D. All of these
- B. Darwin
D. TH Morgan

Darwinism

- Q.26 Natural selection can amplify or diminish variations that are?**
A. Heritable
C. Both a and b
- Q.27 Who developed a theory of natural selection essentially identical to Darwin's?**
A. Hardy-Weinberg
C. Lamarck
- B. Non heritable
D. Acquired
- B. Malthus
D. Alfred Wallace



- Q.28 Darwin was greatly influenced by:**
 A. Essay on population by Malthus
 C. L-Miller's evidence for origin of life
 B. Lamarck's theory
 D. Mendel's paper on inheritance
- Q.29 Darwin's theory mainly focuses on:**
 A. Origin of life
 C. How new species arise
 B. How organs extinct
 D. How organisms form
- Q.30 Which theory tells about adaptation:**
 A. Darwin's natural selection
 C. Hardy
 B. Lamarck's theory
 D. Weinberg's principle
- Q.31 Island present near South American cost line:**
 A. Maldives
 C. Galapagos
 B. Madagascar
 D. New Zealand
- Q.32 Darwin returned to great Britain in:**
 A. 1831
 C. 1836
 B. 1855
 D. 1841
- Q.33 Natural selection was the silent feature of which statement:**
 A. Lamarck
 C. Aristotle
 B. Darwin
 D. Wallace
- Q.34 Darwin collected how many types of finches?**
 A. 12
 C. 14
 B. 13
 D. 15

Darwin's theory evolution

- Q.35 Darwin's Theory of evolution by natural selection is based on all of the following postulates except:**
 A. Some individuals are more successful in surviving and reproduction than others
 B. Individuals within a population are variable
 C. The survival and reproduction of individuals is not random
 D. The survival and reproduction of individuals is random
- Q.36 Darwin described his theory of natural selection as which of the following?**
 A. Punctuated equilibrium
 C. Inheritance of acquired characteristics
 B. Survival of the fittest
 D. Descent with modification
- Q.37 Who developed a theory of natural selection essentially identical to Darwin's?**
 A. Hardy-Weinberg
 C. Lamarck
 B. Malthus
 D. Allred Wallace
- Q.38 Darwin gave his theory of evolution in:**
 A. 1859
 C. 1884
 B. 1822
 D. 1913
- Q.39 Galapagos finches indicated:**
 A. Seasonal migration
 C. Allopatric speciation
 B. Immigration
 D. Parapatric speciation
- Q.40 During which of the following levels of biological organization can natural selection occur?**
 A. Gene
 C. Group
 B. Individual
 D. All
- Q.41 Which of the following would best determine the fitness of an organism?**
 A. The number of offspring produced by the organism
 B. How much food the organism consumes in its lifetime
 C. How large the organism grows
 D. The number of offspring produced by the organism's own offspring
- Q.42 Which organism would be considered the most biologically fit?**
 A. Lives 45 years and produces 3 offspring
 B. Lives 70 years and produces no offspring
 C. Lives 27 years and produces 1 offspring
 D. Lives 36 years and produces 6 offspring
- Q.43 The book name in which Darwin published the theory of evolution:**



- A. The origin of species by natural selection
B. The origin of species
 C. The evolution of species
 D. The evolution of species by means of natural selection
- Q.44 What is the definition of "fitness" in terms of evolution?**
 A. The organism's ability to attain resources while in competition with other organisms of its species
 B. The organism's ability to attract the most mates
 C. The organism's health
D. The ability of an organism to contribute its genes to future generations
- Q.45 The ability to pass on genes is defined as which of the following?**
 A. Differential reproduction
B. Fitness
 C. Evolution
 D. Natural selection
- Q.46 Darwin' theory was based on:**
 A. Mutation
 B. Migration
C. Natural selection
 D. None of the above
- Q.47 The beats definition of natural selection is:**
 A. Survival of the fittest
B. Most fit individuals adapt to their environment better than less fit individuals
 C. Those who eat better are healthier and live longer are most fit within a population
 D. Preservation of traits leads to increase survival and reproduction
- Q.48 Darwin's theory can be named as:**
A. Classical theory
 B. Advanced theory
 C. Neo-Darwinism
 D. Theory of special creation
- Q.49 Specifics of natural selection are:**
A. Regional and permanent
 B. Local and constant
C. Regional and temporary
 D. Both A and B

Neo-Darwinism's

- Q.50 Neo-Darwinism has integrated discoveries and ideas from:**
 A. Genetics
 B. Paleontology
 C. Taxonomy
D. All of these
- Q.51 Neo-Darwinism came on to surface during:**
 A. 1930's
B. 1940's
 C. 1920's
 D. 1950's

Evidence of evolution

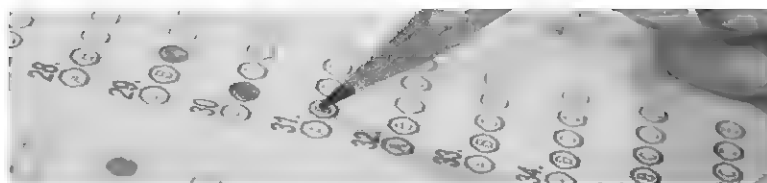
- Q.52 Homology means:**
A. Similarity in characteristics resulting from common ancestors
 B. Similarity in function from acquired characters
 C. Study of similar organs but with different functions
 D. Study of similar organs but with different functions
- Q.53 If two species have similar proteins and genes it means:**
 A. They have same organs.
 B. They have similar appearance
C. They have common ancestors
 D. All of above
- Q.54 Which of the following is not an evidence for evolution?**
 A. Fossil record
 B. Common ancestor organisms
 C. Vestigial structures
D. None of these
- Q.55 Most of the fossils are found in which of the following?**
 A. Metamorphic rocks
 B. Soil
 C. Volcanic mountains
D. Sedimentary rocks
- Q.56 Structures that were once functional in the past but no longer serve a purpose due to evolutionary adaptations and physiological changes are referred to as?**
A. Vestigial
 B. Analogous structures
 C. Homologous structures
 D. None of these
- Q.57 Which type of evolution is represented by analogous organs?**
 A. Divergent evolution
 B. Straight evolution



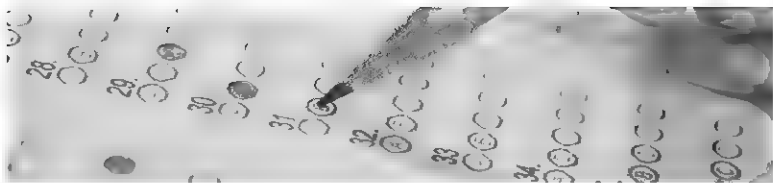
- C. Zig-zag evolution
Q.58 It is not a vestigial organ in humans:
A. Appendix
C. Both A and B
Q.59 Homologous organs show similarity in:
A. Shape
C. Function
Q.60 Which of the following is ancient fossil fuel?
A. Fish
C. Bird
Q.61 Embryo of a turtle, mouse and human show:
A. Comparative embryology
C. Vestigial organs
Q.62 The structures of the front flipper of a whale and the forearm of a wolf have similar bone structure and derive from a common ancestor. This is an example of which of the following?
A. Convergent evolution
C. Homologous structures
Q.63 Example of convergent evolution is:
A. Forelimbs of man and bat
C. Darwin's finches
Q.64 Study of fossils is called:
A. Mammalogy
C. Herpetology
Q.65 Which of the following organs serve no apparent purpose?
A. Non vestigial organs
C. Analogous organs
Q.66 The wings of a bird and the wings of a beetle are considered?
A. Taxonomic
C. Homologous
Q.67 Which statement is incorrect?
A. Homologous organs are functionally different but structurally alike
B. Examples of homologous structures are of cat, flipper of whale
C. Examples of analogous structures are wings of bats, birds and insects
D. Analogous organs are functionally different but structurally alike
Q.68 In humans gill pouches have evolved into which of the following organs?
A. Nose
C. Pharynx
Q.69 Which of the following is not an evidence for evolution?
A. Fossil record
C. Common ancestor organisms
D. Convergent evolution
B. Coccyx
D. None of the above
B. Origin
D. Size
B. Reptile
D. Amphibian
B. Distinct differences
D. Analogous structure
B. Analogous structures
D. Bottleneck effect
B. Wings of birds and insects
D. All
B. Palaeontology
D. Ornithology
B. Homologous organs
D. Vestigial organs
B. Phylogenetic
D. Analogous
D. Eustachian tubes
B. Vestigial structures
D. None of these

Out of the Syllabus

- Q.70 Mating with non-relatives is known as?**
A. Inbreeding
C. Breeding
B. Outbreeding
D. None of these
Q.71 A population of birds encounters a dramatic event that results in a severe decrease in population size. As a result of the newly-decreased population, what type of genetic drift does this population now exhibit?
A. Artificial selection
C. Bottleneck effect
B. Founder effect
D. both a and b
Q.72 When resources get scarce, the population growth?
A. Becomes fast
C. Remains same
B. Slows down
D. None of these
Q.73 Which statement best describes the Hardy-Weinberg principle?
A. Recessive alleles eventually disappear in large populations



- B. Expected frequencies of alleles are impossible to predict mathematically
C. Dominant alleles become more prevalent in large populations
D. When there is a large population, the mechanism of inheritance does not change allele frequencies.
- Q.74** Adaptation of traits to better fill a niche is known as which of the following?
A. Polymorphism
C. Specialization
B. Gene linkage
D. Replication
- Q.75** Which of the following may cause loss of alleles from a gene pool?
A. Interbreeding
C. Migration
B. Mutation
D. None
- Q.76** As long as two species occupy different niches, there is:
A. Competition
B. No competition
C. Gene linkage
D. Polymorphism
- Q.77** Two species can avoid competition and better use the environment's resources by occupying different?
A. Adaptations
C. Niches
B. Polymorphism
D. Specialization
- Q.78** According to Hardy-Weinberg theorem, frequencies of alleles and genotypes in a population's gene pool remain?
A. Mobile in gene pool
B. Constant
C. Stationary in gene pool
D. Constant unless acted upon by agents other than sexual recombination
- Q.79** Bottleneck increases the effect of which of the following:
A. Genetic linkage
C. Genetic diversity
B. Genetic expression
D. Gene pool
- Q.80** Which of the following conditions is not required to be true for a population in Hardy-Weinberg equilibrium?
A. Random mutations
C. No natural selection
B. Large population
D. Random mating
- Q.81** Population growth is checked by which of the following?
A. No competition
C. Polymorphism
D. Competition
B. No polymorphism
- Q.82** Primordial soup is a set of hypothetical conditions on ancient earth first proposed by?
A. Dmitri Ivanovsky
C. Nikolay Shatsky
D. Alexander Oparin
B. Dmitry Anuchin
- Q.83** The ultimate source of all the change is?
A. Migration
C. Genetic drift
B. Mutation
D. Selection
- Q.84** The frequency of allele if it is evolutionary successful is?
A. Increased
C. No change
B. Decreased
D. None of these
- Q.85** When two or more clearly different phenotypes exist in same population of species, the phenomenon is called?
A. Replication
C. Gene linkage
B. Polymorphism
D. Gene expression
- Q.86** Mating between relatives is called which of the following?
A. Inbreeding
C. Breeding
B. Ex breeding
D. Outbreeding
- Q.87** The selection for a trait on one extreme is called which of the following?
A. Natural selection
C. Directional selection
B. Stabilizing selection
D. All of these



ANSWER KEY

EVOLUTION

1	B	21	D	41	A	61	A	81	D
2	B	22	B	42	D	62	C	82	D
3	D	23	D	43	B	63	B	83	B
4	A	24	D	44	D	64	B	84	A
5	C	25	A	45	B	65	D	85	B
6	D	26	A	46	C	66	D	86	A
7	A	27	D	47	B	67	D	87	D
8	D	28	A	48	A	68	D		
9	D	29	C	49	C	69	D		
10	D	30	A	50	D	70	B		
11	A	31	C	51	B	71	B		
12	A	32	C	52	A	72	B		
13	B	33	B	53	C	73	D		
14	A	34	C	54	D	74	C		
15	B	35	D	55	D	75	C		
16	A	36	D	56	A	76	B		
17	A	37	D	57	D	77	C		
18	D	38	A	58	D	78	D		
19	A	39	C	59	B	79	C		
20	D	40	B	60	A	80	A		



LIFE PROCESS IN ANIMALS AND PLANTS (NUTRITION/GASEOUS EXCHANGE/ TRANSPORT)

Carnivorous plants/parasitic nutrition (pitcher plant, venus fly trap, sundew)

Q.1 The venous flower basket is also known as which of the following?

- A. *Sycon* B. *Leucosolenia*
C. *Spongilla* D. *Euplectella*

Water and mineral uptake by roots, xylem and phloem

Q.2 The upward movement of sap by the xylem is:

- A. Ascent of sap B. Plasmolysis
C. Deplasmolysis D. Guttation

Q.3 The attraction between water molecules and cell wall of xylem is termed as:

- A. Cohesion B. Tension
C. Adhesion D. Imbibition

Q.4 Deficiency of which element causes yellowing in plants?

- A. Magnesium B. Iron
C. Chlorine D. Oxygen

Q.5 Which of the following is incorrect for ascent of sap?

- A. Water potential B. Cohesion tension
C. Root pressure D. Imbibition

Q.6 Stomata cover only what portion of the leaf surface?

- A. 10% B. 50%
C. 1-2% D. 0.3 to 0.4%

Q.7 Which cells regulate the opening and closing of stomata?

- A. Neutrophils B. Basophils
C. Guard cells D. Mesophyll cells

Q.8 Water vapors exit and carbon dioxide enters a leaf through:

- A. Stomata B. Grana
C. Porphyrin ring D. Photons

Q.9 Which of these cells is not present in phloem?

- A. Companion cell B. Sieve tube cells
C. Vessels D. Parenchyma

Q.10 The absorption of water through a compound without dissolving in it is known as:

- A. Ascent of sap B. Plasmolysis
C. Imbibition D. Guttation

Q.11 The loss of liquid via the hydathodes is called:

- A. Imbibition B. Guttation
C. Plasmolysis D. None of these

Q.12 Multisensory hydraulic valves are:

- A. Stomata B. Lenticels
C. Guard cells D. Hydathodes

Q.13 Who proposed starch sugar hypothesis?

- A. Sager B. Dixon
C. Mohl D. Drabs

Q.14 The movement of minerals or water via extracellular pathway is known as:

- A. Symplast B. Apoplast
C. Vascular D. None of these

Q.15 Casparian strips are found in:

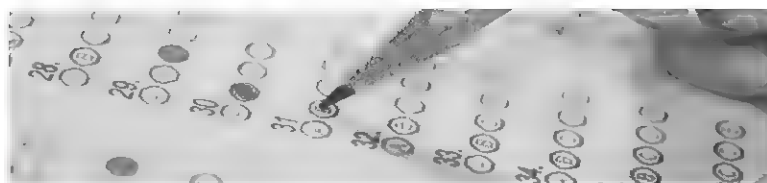
- A. Epidermis B. Endodermis
C. Cortex D. Vascular bundle

Q.16 Guttation is caused due to:

- A. Suppression of transpiration B. Humidity
C. Root pressure D. None

Q.17 Pressure flow theory was proposed by:

- A. Ernst Munch B. Van Neil



C. Hans Krebs

D. TH Morgan

Osmotic pressure/potential

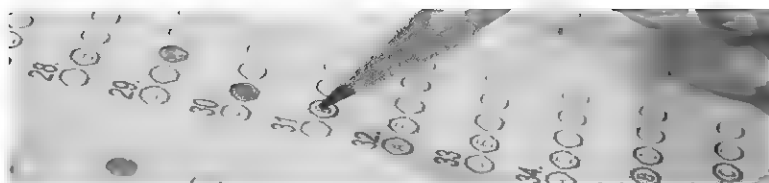
- Q.18 In osmosis water molecules move from area of:**
 A. Higher solute concentration to lower solute concentration
 B. Lower solvent concentration to higher solvent concentration
C. Lower solute concentration to higher solute concentration
 D. All of these
- Q.19 The external solution having more concentration then the cell sap is known as:**
A. Hypertonic solution B. Hypotonic solution
 C. Isotonic solution D. Isotonic solution
- Q.20 The total kinetic energy of water molecules is known as:**
A. Water potential B. Pressure potential
 C. Osmotic potential D. None of these

Cardiovascular system (including human heart structure, blood vessels)

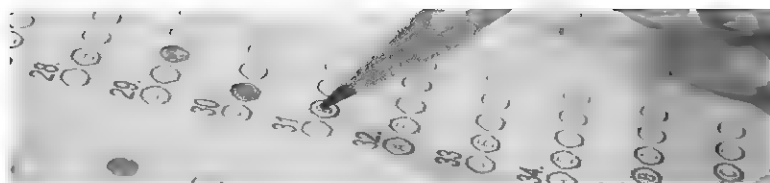
- Q.21 The osmotic pressure of blood is maintained by**
 A. Membrane proteins B. Fibrous proteins
C. Plasma proteins D. Myosin
- Q.22 The number of stages involved in the heart beat is?**
 A. 2 **B. 3**
 C. 4 D. 5
- Q.23 The function of spleen is to filter_____.**
A. Blood B. Amniotic fluid
 C. Semen D. Lymph
- Q.24 A 25 years old female with chronic fatigue was diagnosed with iron deficiency anemia and low blood count what is the cause of her fatigue?**
 A. Reduction in amount of Fe-S centers
 B. Lowered production of water from the electron transport chain that cause dehydration
C. Iron is important for electron transport chain
 D. Iron is important for NADH production
- Q.25 Which of these is common in both lymph vessels and veins?**
 A. Both have small bore **B. Both have valves**
 C. Both have low blood pressure D. Both are communicated
- Q.26 Which one is thickest?**
A. Left ventricle B. Right ventricle
 C. Left auricle D. Right auricle
- Q.27 Chordae tendineae are present in:**
 A. Aorta B. Atrium
C. Ventricle D. Vena cava
- Q.28 Blood is collected from legs by:**
 A. Hepatic vein B. Vena cava
 C. Renal vein **D. Iliac veins**
- Q.29 The number of RBCs at high altitude will:**
 A. Increase in size **B. Increase in number**
 C. Decrease in size D. Decrease in number
- Q.30 A circulatory system has ----- characteristics.**
 A. 1 B. 2
C. 3 D. 6
- Q.31 Pressure is highest in:**
A. Aorta B. Arteries
 C. Capillaries D. Arterioles
- Q.32 Papillary muscles extension are responsible for:**
 A. Bicuspid constriction B. Tricuspid constriction
 C. Mitral constriction **D. All of these**
- Q.33 _____ is a macromolecule found in blood.**



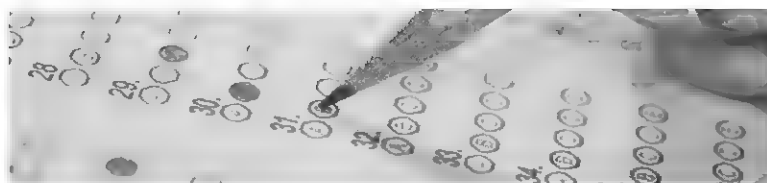
- A. Hemoglobin
C. Creatinine
- Q.34 Heart is enclosed in:**
A. Pericardium
C. Mesentery
- Q.35 Pulse is found in:**
A. Arteries
C. Veins
- Q.36 Iliac arteries supply blood to:**
A. Stomach
C. Esophagus
- Respiratory system**
- Q.37 The cluster of pouches opened from alveolar ducts is known as:**
A. Bronchi
C. Pharynx duct
B. Bronchioles
D. Alveoli
- Q.38 Which of the following is not respiration?**
A. Breakdown of glucose
C. Release of energy
B. Formation of glucose
D. Exchange of gases
- Q.39 A muscular passage that is common to both food and air is known as:**
A. Bronchi
C. Larynx
B. Bronchioles
D. Pharynx
- Q.40 The process of intake of oxygen and release of carbon dioxide is known as:**
A. Respiratory exchange
C. Diffusion
B. Gaseous exchange
D. Osmosis
- Q.41 Air contains what percentage of carbon dioxide?**
A. 0.02-0.03
C. 0.04-0.05
B. 0.03-0.04
D. 0.05-0.06
- Q.42 Which of these is functional unit of lungs?**
A. Air sacs
C. Bronchi
B. Alveoli
D. Bronchioles
- Q.43 What is correct about myoglobin?**
A. It is iron containing protein pigment
C. It also stores some oxygen
B. It occurs in muscle fibres
D. All of these
- Q.44 What is the intermediate part of the respiratory system between trachea and pharynx?**
A. Glottis
C. Bronchi
B. Voice box
D. A and B
- Q.45 Pleural membranes cover:**
A. Brain
C. Kidneys
B. Heart
D. Lungs
- Q.46 The flap like structure found on larynx is called:**
A. Glottis
C. Larynx
B. Vocal cords
D. Epiglottis
- Q.47 Lungs are porous due to the presence of:**
A. Bronchi
C. Terminal bronchiole
B. Alveoli
D. Respiratory bronchiole
- Q.48 Pick the odd one out:**
A. Heart
C. Kidney
B. Life
D. Lungs
- Q.49 The covering of lungs is termed as:**
A. Pleural membrane
C. Pericardium
B. Myocardium
D. Both B and C
- Q.50 The space inside the chest cavity during inspiration is:**
A. Decreased
B. Increased



- C. Remains same
- Q.51 Which is not true about human lungs?**
A. They are opened sacs
C. They are spongy in nature
- Q.52 The function of vocal cords is to help in:**
A. Voice production
C. Glucose production
- Q.53 The factor which affect the oxygen saturation of hemoglobin:**
A. CO₂
C. pH of blood
- Q.54 Intercostal muscles are found in:**
A. Ribs
C. Lungs
- Q.55 Amount of oxygen in inspired air is 21 % while in expired air is:**
A. 0.11
C. 0.15
- Q.56 The wall of chest cavity is composed of:**
A. Intercostal muscles
C. Both and A and B
- Q.57 A surfactant plays its role by:**
A. No effect on surface tension
C. Decreasing surface tension
- Q.58 The cartilage protects the trachea from:**
A. Collapsing
C. Swelling
- Q.59 The thick muscular structure which is present below the pair of lungs is known as:**
A. Pharynx
C. Bronchi
- Q.60 The floor of the chest is called:**
A. Alveoli
C. Bronchi
- Q.61 What is the length of the windpipe?**
A. 12 cm
C. 18 cm
- Q.62 Select the phase/s of breathing:**
A. Inhalation
C. Both and A and B
- Q.63 The smaller tubes within the chest cavity having cartilaginous plates are known as**
A. Pharynx
C. Bronchi
- Q.64 What is the human breathing rate during hard physical work?**
A. 10 to 15 times per minute
C. 80 to 120 times per minute
- Q.65 Each air-sac consists of several microscopic single layered structures called:**
A. Bronchioles
C. Bronchi
- Q.66 In human, the total inside capacity of lungs is about:**
A. 3.5 liters
C. 4 liters
- Q.67 Which of these does not contain cartilage?**
A. Bronchioles
C. Trachea
- Q.68 A surfactant is a secretory product that is composed of:**
A. Protein and disaccharide
C. Lipid and carbohydrate
- D. First increased then decreased
- B. They are closed sacs
- D. They are placed in chest cavity
- B. Energy production
- D. Air production
- B. Temperature
- D. All of these are correct**
- B. Pharynx
- D. Both B and C
- B. 0.12
- D. 0.16**
- B. ribs
- D. Diaphragm
- B. Increasing surface tension
- D. None of these
- B. Vibrating
- D. Breaking
- B. Diaphragm**
- D. None of these
- B. Trachea
- D. None of these**
- B. 15cm
- D. 20 cm
- B. Exhalation
- D. Vocal waves
- B. Bronchioles
- D. Both B and C
- B. 10 to 20 times per minute
- D. 30-40 times per minute**
- B. Windpipe
- D. Alveoli**
- B. 2.5 liters
- D. 6 liters**
- B. Larynx
- D. Bronchi
- B. Protein and lipid**
- D. Carbohydrate and vitamins

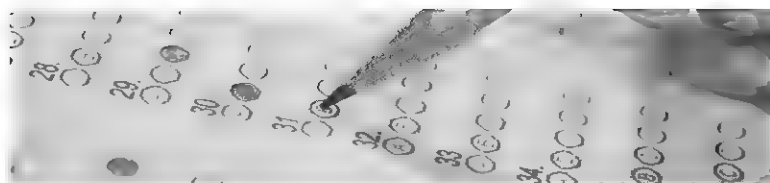


- Q.69** What is the breathing rate in humans during exercise?
A. 15-20 times per minute
C. 20 times per minute
B. 30 times per minute
D. 10-20 times per minute
- Q.70** The epiglottis, a flap of tissues covers the:
A. Pharynx
C. Glottis
B. Larynx
D. Nasal cavity
- Q.71** How many pair of ribs are present in chest wall?
A. 10
C. 12
B. 11
D. 13
- Q.72** Which of these is not involved in respiration?
A. Lungs
C. Glucagon
B. Trachea
D. Bronchi
- Q.73** A surfactant is essential for:
A. Efficient gas exchange
C. Maintaining structural integrity of alveoli
B. Both A and C
D. None of these
- Q.74** Trachea is also termed as:
A. Voice box
C. Bronchi
B. Epiglottis
D. Windpipe
- Q.75** Which pigment protein is also known as muscle haemoglobin?
A. Melanin
C. Rhodopsin
B. Myoglobin
D. Lutein
- Q.76** Which of the following is the key function of pleural cavity?
A. Reduces friction between membranes
B. Slide easily on one another
C. Allows membrane to adhere on one another
D. All of these are correct
- Q.77** During transport of carbon dioxide, blood does not become acidic due to:
A. Blood buffer
C. Absorption by leukocytes
B. Neutralization of H_2CO_3 by Na_2CO_3
D. Non-accumulation
- Q.78** The oxygen and carbon dioxide crosses the plasma membrane by the process of?
A. Active diffusion
C. Passive diffusion
B. Facilitated diffusion
D. Random diffusion
- Q.79** Maximum capacity of hemoglobin to absorb oxygen is:
A. 19.6ml/100 ml blood
C. 30 ml/100 ml blood
B. 25 ml/100 ml blood
D. 20 ml/100 ml blood
- Q.80** Most carbon dioxide is transported in the form of:
A. Carboxyhaemoglobin
C. Bicarbonate ions
B. Plasma proteins
D. In dissolved form
- Q.81** In nostrils, the substance which moistens and keep the incoming air warm is called:
A. Bronchi
C. Pharynx
B. Mucous
D. Glottis
- Q.82** Each nasal cavity is subdivided into _____ passageways in man.
A. 1
C. 3
B. 2
D. 4
- Q.83** A series of C shaped cartilage rings are found in the wall of:
A. Epiglottis
C. Bronchi
B. Trachea
D. None of these
- Q.84** Air enters the nasal cavity through:
A. Lungs
C. Trachea
B. Bronchi
D. Nostrils
- Q.85** The structures with a diameter less than 1mm are:
A. Bronchioles
C. Alveoli
B. Bronchi
D. Air sac
- Q.86** Which product is formed when carbon dioxide combines with amino group of haemoglobin?
A. Carboxyhemoglobin
B. Plasma proteins

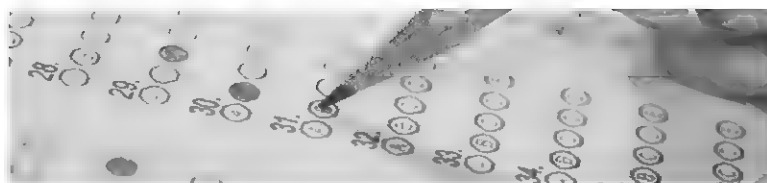


- C. Bicarbonate ions
D. Histamines
- Q.87** The process through which organisms get oxygen for their cells from their surrounding environment is known as:
A. Respiratory exchange
B. Diffusion
C. Gaseous exchange
D. Osmosis
- Q.88** Carbonic anhydrase is found in:
A. R.B.C
B. Parabronchi
C. Pleura
D. None of these
- Q.89** The inflammation of bronchi or bronchioles is known as:
A. Emphysema
B. Pneumonia
C. Asthma
D. Bronchitis
- Q.90** Breathing is considered as a:
A. Chemical process
B. Biochemical process
C. Mechanical process
D. Both A and B
- Q.91** Glottis is lined with:
A. Plasma membrane
B. Mucous membrane
C. Meninges
D. Epithelial membrane
- Q.92** The carbon dioxide transported in the form of carbonate ions is:
A. 30%
B. 50%
C. 70%
D. 95%
- Q.93** Hemoglobin can carry:
A. 1 molecule of oxygen
B. 2 molecules of oxygen
C. 3 molecules of oxygen
D. 4 molecules of oxygen
- Q.94** The infection of lungs is called:
A. Emphysema
B. Asthma
C. Pneumonia
D. Bronchitis
- Q.95** The disease characterized by the breakdown of alveoli is called:
A. Asthma
B. Tuberculosis
C. Emphysema
D. A and B
- Q.96** How many compounds of tar of tobacco smoke are included in causing cancer?
A. 2
B. 8
C. 5
D. More than 10
- Q.97** The inside of the lungs is damaged in:
A. Emphysema
B. Lung cancer
C. Tuberculosis
D. Asthma
- Q.98** Asthma releases a compound named as:
A. Histamine
B. Heparin
C. Epinephrine
D. Antibodies
- Q.99** Loss of lung tissue is caused by:
A. Emphysema
B. Asthma
C. Pneumonia
D. Bronchitis
- Q.100** Cancer expands systematically by:
A. Locally
B. Systemic
C. Metastasis
D. Invasion
- Q.101** The respiratory disorder in which cells division takes place without any control and causes tumors is known as:
A. Emphysema
B. Asthma
C. Lung cancer
D. Bronchitis
- Q.102** What is the main cause of lung cancer?
A. Smoking
B. Cough
C. Pollutants
D. Mutagens
- Q.103** The bronchitis is of types?
A. 2
B. 4
C. 3
D. 5

Digestive system



- Q.104** Pancreatic zymogens are only activated when they reached at?
A. Stomach
C. Small intestine
B. Pancreas
D. Large intestine
- Q.105** The nodules of lymphoid tissue found in the wall of the intestinal tract are termed as:
A. Grave's region
B. Peyer's patches
C. Hashimoto's nodes
D. DiGeorge's nodes
- Q.106** Zymogen cells secrete:
A. Pepsinogen
C. HCL
B. Mucus
D. Intrinsic factor
- Q.107** It is not produced by duodenum:
A. Cholecystokinin
C. Mucus
B. Secretin
D. Biliverdin
- Q.108** Salivary amylase acts on:
A. Starch
C. Protein
B. Cellulose
D. Lipid
- Q.109** Trypsinogen is activated to trypsin by:
A. Kinases
C. Mucus
B. HCL
D. Enterokinase
- Q.110** Cells that lower pH of stomach:
A. Mucous
C. Zymogen
B. Chief
D. Parietal
- Q.111** Erypsin works on:
A. Polypeptide
C. Peptone
B. Dipeptide
D. All
- Q.112** After stomach, digestion occurs in:
A. Small intestine
C. Colon
B. Cecum
D. Rectum
- Q.113** Which is true about pepsin?
A. It is produced in inactivated form
C. It requires basic medium
B. It is produced form esophagus
D. It is an apoenzyme
- Q.114** Secretion of secretin is forced by:
A. Food from stomach
C. Pancreatic juice
B. Bile form liver
D. All of these
- Q.115** Botulism is severe form of:
A. Anemia
C. Beriberi
B. Food poisoning
D. Constipation
- Q.116** Loss of weight takes place due to:
A. Anorexia nervosa
C. Both A and B
B. Bulimia nervosa
D. Constipation
- Q.117** Which enzyme is found in saliva?
A. Pepsin
C. Ptyalin
B. Lipase
D. Lactase
- Q.118** Its length is 2.4m and comprises 2/5 of small intestine.
A. Ileum
B. Jejunum
C. Duodenum
D. None of these
- Q.119** Pair of salivary glands located behind the jaws is called
A. Sublingual gland
B. Submaxillary glands
C. Parotid glands
D. Adrenal glands
- Q.120** A condition with abnormal amount of fats is called:
A. Anorexia
C. Piles
B. Botulism
D. Obesity
- Q.121** Largest gland in human body:
A. Liver
C. Thymus
B. Adrenals
D. Parotid
- Q.122** Largest part of large intestine:



- A. Rectum
C. Caecum
- Q.123** What is the length of duodenum in cm?
A. 15-20
C. 21-25
- Q.124** Which of the following would most greatly increase the activity of an enzyme functioning in the small intestine?
A. Decrease the temperature
C. Decrease the pH
- Q.125** What is the pH of fresh HCl?
A. 1.5
C. 2-3
- Q.126** In the intestine, the branches of lymph capillaries, within villi, are called:
A. Lacteals
C. Lymphatic vessels
- Q.127** Bacteria live in human body for enzymatic source and vitamin:
A. Enterococcus
C. Campylobacter
- Q.128** The semi solid mass in stomach is known as:
A. Bolus
C. Serum
- Q.129** Choose the function irrelevant to oral cavity:
A. Grinding
C. Lubrication
- Q.130** Lipid emulsification is done by:
A. Pancreatic juice
C. Gastric juice
- Q.131** Incomplete or imperfect digestion is known as which of the following?
A. Obesity
C. Bulimia nervous
- B. Colon
D. Appendix
- B. 20-25
D. 25-30
- B. Increase the amount of substrate
D. Increase the amount of enzymes
- B. 5-7
D. 4-5
- B. Lymph
D. Lymph nodes
- B. Pseudomonas
D. Spirochete
- B. Chyme
D. Food
- B. Digestion
D. Absorption
- B. Bile
D. Intestinal juice
- B. Anorexia nervosa
D. Dyspepsia

Immune & system

- Q.132** The deficiency of which of the following cause the immunodeficiency?
A. Hypoxanthine-guanine transferase
C. PRPP synthetase
- Q.133** What is true about T-Cells?
A. A type of lymphocytes
C. They kill the foreign invader
- Q.134** Pathogens inside body are killed by:
A. Antibodies
C. Interferon
- B. Xanthine oxidase
D. Adenosine deaminase
- B. Present in blood and work as defence
D. All
- B. Immune system cells
D. All of these

Lymphatic system

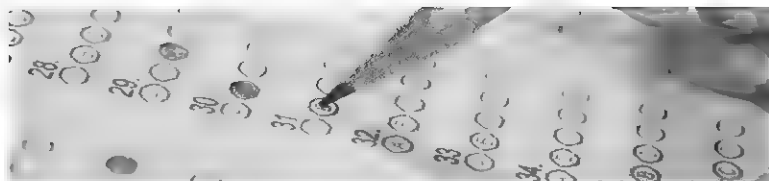
- Q.135** A fluid in transit between interstitial fluid and the blood:
A. Synovial fluid
C. Amniotic fluid
- Q.136** The number of efferent lymph vessels in a lymphatic system is:
A. 1
C. 3
- Q.137** Tonsils are related to:
A. Lymphatic system
C. Nervous system
- Q.138** Slow rate of peristalsis causes:
A. Diarrhoea
C. Vomiting
- Q.139** Amount of lymph produced per day is:
A. 2 to 3 liter
- B. Pleural fluid
D. Lymph
- B. 2
D. Numerous
- B. Blood circulatory system
D. Defense system
- B. Constipation
D. All of these
- B. 7 to 8 liter



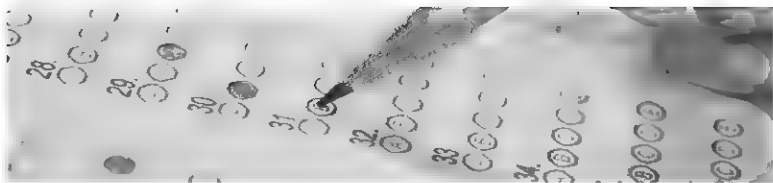
- C. 8 to 12 liter
D. None
- Q.140 Lymph nodes may be located in the human body in the tissues of:**
A. Stomach
B. Brain
C. Thyroid gland
D. Groin and neck
- Q.141 The flow of lymph is always towards:**
A. Pancreatic duct
B. Thoracic duct
C. Bile duct
D. Parotid duct
- Q.142 Lymph capillaries join together form larger lymph vessels, that gives rise to:**
A. Thoracic duct
B. Lymph duct
C. Thoracic lymph duct
D. Sperm duct
- Q.143 Lymphatic system consists of all the following except:**
A. Lymph nodes
B. Blood
C. Lymphatic vessels
D. Lymph
- Q.144 The function of lymph node is to filter_____.**
A. Blood
B. Lymph
C. Semen
D. Amniotic fluid
- Q.145 Thymus is found in human body _____.**
A. In the medulla oblongata
B. In the mediastinum if the upper thorax
C. Both A & B
D. None
- Q.146 Which of these is correct about thoracic duct?**
A. It arises in the vessels of the brain
B. It drains the entire body above the diaphragm
C. It empties its contents into the subclavian vein
D. It carries blood into the lymphatic system
- Q.147 Lymph vessels transfer the lymph into blood through:**
A. Subclavian artery
B. Subclavian vein
C. Iliac artery
D. Iliac vein
- Q.148 Lymphoid masses present in the wall of:**
A. Digestive track
B. Sub Mucosa
C. Mucosa
D. All of these

Out of the Syllabus

- Q.149 The space between the overtopped dichotomous branches was occupied by a sheet of which cells during evolution of megaphylls?**
A. Sclerenchyma
B. Parenchyma
C. Collenchyma
D. Chlorenchyma
- Q.150 There are how many stomata per square cm of leaf surface in Tobacco plants?**
A. 10000
B. 12000
C. 15000
D. 20000
- Q.151 Which element has function in opening and closing of stomata?**
A. K
B. Mg
C. Cu
D. Fe
- Q.152 Chlorosis, which is represented by yellowish hue on the leaves results from which of the following?**
A. Accumulation of toxic waste products in leaves
B. Deficiency of chlorophyll
C. Short supplies of mineral nutrients in the soil
D. All of these
- Q.153 Cell turgidity is caused by:**
A. Endosmosis
B. Exosmosis
C. Plasmolysis
D. Active transport
- Q.154 It is a detritus feeder:**
A. Leech
B. Earthworm
C. Hook worm
D. Pin worm
- Q.155 Autoimmune diseases act at the principal of:**
A. Self against self
B. Self against antigens



- C. Antigens self-destroyed
- Q.156 Thick, waxy & leathery cuticle around leaves is present in which of the following?**
- A. Hydrophytes
- B. Mesophytes
- C. Halophytes
- D. Xerophytes



ANSWER KEY

LIFE PROCESSES IN ANIMALS AND PLANTS

(NUTRITION/GASEOUS EXCHANGE/TRANSPORT)

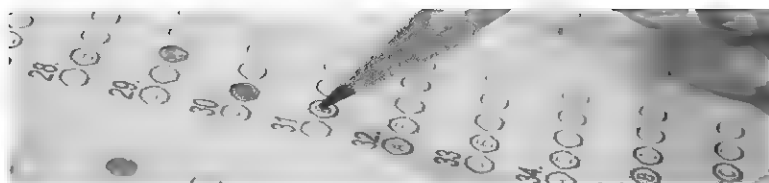
1	D	21	C	41	B	61	A	81	B	101	C	121	A	141	B
2	A	22	B	42	A	62	C	82	C	102	D	122	B	142	B
3	C	23	A	43	D	63	C	83	B	103	A	123	D	143	B
4	A	24	C	44	D	64	D	84	D	104	C	124	D	144	B
5	A	25	B	45	D	65	D	85	A	105	B	125	A	145	B
6	C	26	A	46	D	66	D	86	A	106	A	126	A	146	C
7	C	27	C	47	B	67	A	87	C	107	D	127	A	147	B
8	A	28	D	48	B	68	B	88	A	108	A	128	B	148	A
9	C	29	B	49	A	69	B	89	D	109	D	129	D	149	B
10	C	30	C	50	B	70	B	90	C	110	D	130	B	150	B
11	B	31	A	51	A	71	C	91	B	111	C	131	D	151	A
12	C	32	D	52	A	72	C	92	C	112	A	132	D	152	B
13	B	33	A	53	D	73	B	93	D	113	A	133	D	153	A
14	C	34	A	54	A	74	D	94	C	114	A	134	B	154	B
15	B	35	A	55	D	75	B	95	C	115	B	135	D	155	A
16	C	36	D	56	C	76	D	96	D	116	C	136	A	156	D
17	A	37	D	57	C	77	A	97	A	117	C	137	A		
18	C	38	B	58	A	78	C	98	A	118	B	138	B		
19	A	39	D	59	B	79	D	99	A	119	B	139	A		
20	A	40	B	60	D	80	C	100	C	120	D	140	D		



PROKARYOTES

Cellular Structure of bacteria

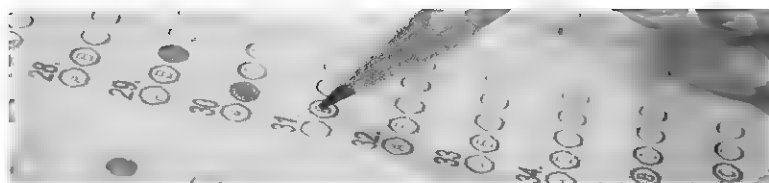
- Q.1** Cyanobacteria have which of the following type of cell wall?
A. Gram positive
C. Cellulose
B. Gram negative
D. Acid fast
- Q.2** In a bacterial cell, plasma membrane with all things present within it is called:
A. Cytoplasmic matrix
C. Protoplast
B. Cytoplasm
D. Cell Structure
- Q.3** Prokaron means before nucleus is word of _____ language.
A. Dutch
C. Roman
B. Greek
D. Spanish
- Q.4** Microbiologist place bacteria in following major categories:
A. Archaeobacteria and vibrio bacteria
C. Eubacteria and archaeobacteria
B. Eubacteria and Streptococcus
D. Cyanobacteria and archaeobacteria
- Q.5** The Prokaryotic Life is characterized by
A. Absence of locomotion
C. Absence of Protein
B. Absence of nuclear envelope
D. Absence of nuclear material
- Q.6** All of the following are characteristics of prokaryotic cells except?
A. Unicellular
B. Lack of membrane-bound organelle
C. Lack of a nucleus
D. They are usually found in protists and fungi
- Q.7** Which of the following structures helps cyanobacteria to move?
A. Flagella
C. Gas vesicles
B. Capsule
D. None of these
- Q.8** What is the strengthening material of the prokaryotic cell wall?
A. Cellulose
C. Silica waxes and lignin
B. Chitin
D. Peptidoglycan or murein
- Q.9** What is not a part of protoplasm?
A. Capsule of bacteria
C. Cell membrane
B. Nucleus
D. Mitochondria
- Q.10** The gram positive bacteria appear which colour under gram staining?
A. Purple
C. Pink
B. Red
D. Blue
- Q.11** In Prokaryotes, _____ are involved in respiration.
A. Mesosomes and cell membrane
B. Cell membrane and ribosome
C. Mesosomes and ribosomes
D. All of Above
- Q.12** Methicillin-resistant Staphylococcus aureus is an antibiotic-resistant “superbug” that can cause deadly infections in humans. What would these Gram-positive bacteria look like under a microscope?
A. Purple spheres
C. Pink rods
B. Clear rods
D. Purple spirals
- Q.13** The filamentous appendages called pilli are present only on:
A. Gram - Positive bacteria
C. Chemosynthetic bacteria
B. Gram - Negative bacteria
D. None of above
- Q.14** The mode of reproduction for cyanobacteria is which of the following?
A. Mitosis
C. Meiosis
B. Binary fission
D. Conjugation
- Q.15** Which of the following is found in bacterial cells, but not in mature red blood?
A. Nucleus
C. Cell membrane
B. DNA
D. Mitochondria



- Q.16** A bacterium with tuft of flagella at both poles is called?
A. Lophotrichous
B. Peritrichous
C. Monotrichous
D. Amphitrichous
- Q.17** The most common waste material produced by bacteria is?
A. Lactic acid
B. Urea
C. Ammonia
D. Uric acid
- Q.18** Which of the following contains genes for drug and disease resistance in bacteria?
A. Plasmid
B. Nucleotide
C. Mesosomes
D. All of these
- Q.19** Archaeobacteria can survive at which of the following temperature? (Celsius)
A. 300
B. 120
C. 150
D. 200
- Q.20** Pilli are hollow appendages in bacteria that are used for:
A. Motility
B. Conjugation
C. Chemical detection
D. None of above
- Q.21** Which of following is not considered as basic shape of a bacterium
A. Cocci
B. Filamentous
C. Spiral
D. Bacilli
- Q.22** Cell wall is only absent in which of the following group of bacteria?
A. Staphylococci
B. *Pseudomonas*
C. *Diplococcus pneumonia*
D. Mycoplasmas
- Q.23** In what category of bacteria does *Neisseria* most likely fall?
A. Cocci
B. Bacilli
C. Spirochete
D. None of these
- Q.24** Which of the following structure is not present in all bacteria?
A. Cell membrane
B. Chromatin
C. Ribosome
D. Capsule
- Q.25** Which of the following is not a method of genetic recombination in bacterium?
A. Conjugation
B. Transformation
C. Transduction
D. Binary Fission
- Q.26** Which of the following bacteria do not commonly have flagella?
A. Cocci
B. Bacilli
C. Streptobacillus
D. Vibrio
- Q.27** What allows bacteria to stain positively with gram stain?
A. The bacteria is anaerobic
B. The bacterial sample was pretreated with 3% ethanol
C. The bacteria's periplasmic space
D. The bacteria's thick peptidoglycan cell walls
- Q.28** The process of recombination in prokaryotes takes place in which of the following ways?
A. Transformation
B. Conjugation
C. Transduction
D. All of these
- Q.29** The flagella originate from which part of the cell?
A. Basal body
B. Cell membrane
C. Cell wall
D. Capsule
- Q.30** Those bacteria which are fully dependent upon their host for nutrition are called?
A. Heterotrophic bacteria
B. Saprotrophic bacteria
C. Chemosynthetic bacteria
D. Parasitic bacteria
- Q.31** Flagella are basically composed of?
A. Protein
B. Enzyme
C. Chemical
D. None of above
- Q.32** Which of the following would not be found in a prokaryotic cell?
A. Mitochondria
B. RNA
C. Ribosomes
D. Plasma membrane
- Q.33** Which of the following characteristics make plasmid DNA useful for researchers?
A. Readily incorporate cloned DNA



- B. Capable of autonomous replication
C. Capable of being isolated from genomic DNA
D. All of these
- Q.34 Characteristic of prokaryotic cells?**
A. Absence of membrane bound cell organelles
B. Absence of nucleus
C. Presence of 70S ribosomes
D. All of these
- Q.35 Which of the following would not be observed in a bacterial cell?**
A. DNA
B. Golgi apparatus
C. Cell membrane
D. Ribosomes
- Q.36 The function of cell wall in prokaryotes is:**
A. To give cells rigidity
B. To give specific shape
C. To protect from osmotic lysis
D. All of the above
- Q.37 True bacteria are termed as:**
A. Eubacteria
B. Archaeobacteria
C. Cyanobacteria
D. None of above
- Q.38 The presence of peptidoglycan in Gram positive bacteria is:**
A. 40% of dry weight
B. 50% of dry weight
C. 10% of dry weight
D. 80% of dry weight
- Q.39 Which of the following is true of both bacterial conjugation and meiosis?**
A. Both processes produce four haploid cells
B. Both processes are a form of asexual reproduction
C. Both processes involve genetic recombination
D. None of these
- Q.40 A type of bacterial cell that completely surrounded by flagella is called:**
A. Diplococcus
B. Tetrad
C. Peritrichous
D. Monotrichous
- Q.41 Which of the following is heat resistant organelle?**
A. Spores
B. Cysts
C. Granules
D. All of Above
- Q.42 Which of the following is false about conjugation?**
A. It forms a bridge between two bacterial cells
B. It involves transport of genetic material via vectors
C. It is a form of sexual reproduction
D. Both A and B
- Q.43 For respiratory metabolism, bacterial cell membrane contains:**
A. Proteins
B. Lipids
C. Enzymes
D. Chemicals
- Q.44 What is the name of the region where double-stranded single circular DNA is found in the prokaryotic cell?**
A. Proton Nucleus
B. Nucleus
C. Nucleoplasm
D. Nucleoid
- Q.45 What is true for pili and flagella like structures of bacteria:**
A. Both are same in size
B. Both are involved in locomotion
C. Both are composed of proteins
D. All of Above
- Q.46 Which of the following structure provides greater pathogenicity to the bacteria?**
A. Slime
B. Cell wall
C. Cell membrane
D. Capsule
- Q.47 The presence of which of these cell structures would confirm that the cell is prokaryotic?**
A. Cytoplasm
B. Ribosomes
C. Flagella
D. Peptidoglycan cell wall
- Q.48 In prokaryotic cells, ribosomes are of?**
A. 50S + 40S
B. 80S
C. 60S + 40S
D. 70S



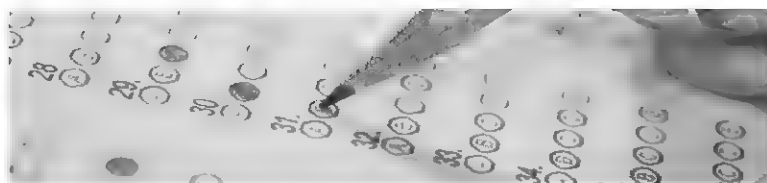
- Q.49** Cell wall of a bacterial cell is more permeable in:
A. Gram positive bacteria B. Gram negative bacteria
C. Both A & B D. Mycoplasmas
- Q.50** Which of the following is a form of asexual reproduction in prokaryotic cells?
A. Binary fission and mitosis
B. Binary fission and meiosis
C. Binary fission and transformation
D. **Binary fission**
- Q.51** The cell wall of Archaeobacteria does not contain which of the following?
A. Glycoproteins B. Polysaccharides
C. Proteins D. **Peptidoglycan**
- Q.52** Which of the following is most responsible for bacterial cell motility?
A. Cilia B. **Flagella**
C. Pili D. Pseudopodia
- Q.53** Chromatin body in prokaryotes can also termed as:
A. Nuclear body B. Nuclear region
C. Nucleoid D. **All of Above**
- Q.54** Cyanobacteria help in nitrogen fixation since they have:
A. **Heterocyst** B. Hormogonia
C. Akinetes D. Mesosomes
- Q.55** Protein named as pilin is present in:
A. Flagella B. **Pilli**
C. Capsule D. Slime
- Q.56** Periplasmic space is absent in:
A. Gram positive bacteria B. Gram negative bacteria
C. Both and B D. **None**
- Q.57** Which part of bacteria is most delicate and damage can kill bacterial cell immediately?
A. Cell wall B. **Cell membrane**
C. Slime D. Capsule
- Q.58** It occupies position near center of cell:
A. Chromosome B. Plasmid
C. **Nucleoid** D. Mitochondria
- Q.59** Which is present in every bacterium?
A. Cell wall B. Slime
C. **Cell membrane** D. Capsule
- Q.60** Cyanobacteria are related to eukaryotes in having:
A. PS1 B. PSII
C. **Both A and B** D. None
- Q.61** Which organelle is of prokaryotic origin?
A. Mitochondria B. Chloroplast
C. **Both A and B** D. None of the above
- Q.62** Spores are resistant to:
A. Antibodies B. Environmental stress
C. Disinfectants D. **All of these**
- Q.63** Cyanobacteria move by:
A. Gas vesicles B. Gliding motility
C. Flagella D. **Both A and B**
- Q.64** Purple non-sulphur is an example of:
A. **Photosynthetic bacteria** B. Heterotrophic bacteria
C. Saprotrophic bacteria D. Chemosynthetic bacteria
- Q.65** Which of the following type of bacterial replication is most similar to mitosis?
A. Transduction B. **Binary fission**
C. Conjugation D. Transformation
- Q.66** Example of bacterial requiring low concentration of oxygen is:



- A. Spirochete
C. *Pseudomonas*
- Q.67 Bacteria that live in humus are _____.**
A. Saprophytic
C. Aerobic
B. *E. coli*
D. *Campylobacter*
- Q.68 Cyanobacteria are _____ in nature.**
A. Autotroph
C. Decompose
B. Anaerobic
D. Facultative
- Q.69 All bacterial species have this organelle in common:**
A. Ribosome
C. Pilli
B. Heterotroph
D. None
- Q.70 Aerobic bacteria release:**
A. Sulphur
C. CO₂
B. Oxygen
D. Hydrogen
- Q.71 Bacteria without flagella are called:**
A. Atrichous
C. Lophotrichous
B. Amphitrichous
D. Peritrichous
- Q.72 *E. coli* is a:**
A. Facultative
C. Gram negative
B. Anaerobic
D. All of these
- Q.73 Which true prokaryotes is a photosynthetic bacterium?**
A. Cyanobacteria
C. *Chlorella*
B. *Nostoc*
D. *E. coli*
- Q.74 The structure of prokaryote which is involved in attachment:**
A. Pili
C. Cell wall
B. Flagella
D. Outer membrane
- Q.75 Cyanobacteria undergo photosynthesis with help of:**
A. Phycobilisome
C. Spores
B. Mesosomes
D. Cytoplasmic granule

Shape and size of bacteria

- Q.76 Streptobacillus is basically a:**
A. Single cell
C. Pairs of bacilli
B. Chain of bacilli
D All of Above.
- Q.77 The several distinct arrangements of cocci is based on their**
A. Long chain of cells
C. Grape like clustered shape
B. Planes of division
D. All of Above
- Q.78 In cocci, three plane division results in the formation of sarcina which is a:**
A. Cube of 8 cocci
C. Irregular structure
B. Square of 4 cocci
D. Triangular 6 cocci
- Q.79 Division of cocci in three planes results in formation of:**
A. Sarcina
C. Grape like clusters
B. Tetrad
D. All of above
- Q.80 The size of Spirochete is approximately?**
A. 0.75-1.25 μm
C. 0.1 -600 μm
B. 100-200 nm
D. 500 μm
- Q.81 Spiral shaped bacteria is:**
A. *E. coli*
C. *Mycoplasma*
B. *Vibrio*
D. *Bacillus*
- Q.82 A huge microorganism, *Acanthurus nigrofusus* is a _____ discovered in intestine of brown surgeonfish.**
A. Bacterium
C. Parasite
B. Virus
D. Protozoa
- Q.83 Group of 8 cocci bacteria is called?**
A. Diplococci
B. Streptococcus



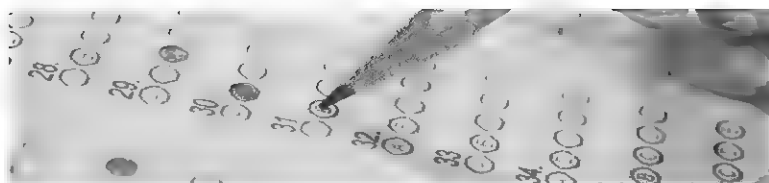
- C. Tetrad
D. Sarcina
- Q.84 Which of the following has a chain-like arrangement?**
A. Streptobacillus
B. Streptococci
C. Both A and B
D. None of these
- Q.85 Which of the following bacteria possesses a spherical shape?**
A. Bacillus anthracis
B. Escherichia coli
C. Spirillum minus
D. Staphylococcus aureus
- Q.86 Coccobacillus has a shape similar to which of the following?**
A. Egg
B. Rod
C. Ball
D. None of these
- Q.87 Which is a spiral shape bacteria?**
A. Spirochete
B. E. coli
C. Pseudomonas
D. Streptococcus
- Q.88 Which of the following bacteria is equal to the size of hyphen?**
A. Epulopiscium fishelsoni
B. Pseudomonas aeruginosa
C. Escherichia coli
D. Streptococcus pneumoniae

Importance and control of bacteria

- Q.89 Chemical substances used on living tissues that inhibit the growth of microorganism are called?**
A. Disinfectant
B. Sanitizer
C. Antibiotic
D. Antiseptics
- Q.90 Approximately how many species of bacteria are known to cause diseases in humans?**
A. 100
B. 150
C. 200
D. 250
- Q.91 Discoloration of teeth is due to misuse of:**
A. Tetracycline
B. Ampicillin
C. Kanamycin
D. Erythromycin
- Q.92 For sterilization, _____ are used.**
A. UV rays
B. IR rays
C. Gamma rays
D. X-rays
- Q.93 Deafness is caused by excess use of:**
A. Tetracycline
B. Streptomycin
C. Levofloxacin
D. Erythromycin
- Q.94 Bacteria play important role in:**
A. Nitrogen cycle
B. Carbon cycle
C. Urea cycle
D. Water cycle
- Q.95 For sterilization, which of the following is used:**
A. Dry heat
B. Moist heat
C. Gamma rays
D. All of these
- Q.96 Pesticide and insecticides are made up of:**
A. Physical agents
B. Biological agents
C. Chemical agents
D. All of these
- Q.97 Removal of a parasite from the body of the host is called:**
A. Sterilization
B. Disinfection
C. Disinfestation
D. None of these
- Q.98 What is the main role of bacteria?**
A. CO₂ cycle
B. Nitrogen cycle
C. Phosphorus cycle
D. All of above

Out of Syllabus

- Q.99 Who coined the term Animalcules for microorganisms like Bacteria and protozoa?**
A. Robert Koch
B. Louis Pasteur
C. Alexander Fleming
D. Leeuwenhoek
- Q.100 Rapid growth at exponential rate occurs in which phase of bacterial growth?**



- A. Lag
C. Stationary
D. Decline
- Q.101** Which of the following refers to the region of RNA responsible for binding ribosomes during prokaryotic translation?
A. TATA box
C. Terminator
B. Promoter
D. Shine-Dalgarno sequence
- Q.102** Compound Microscope was first used by:
A. A.V. Leeuwenhoek
C. Janssen and Hans
B. Pasture
D. None of these
- Q.103** Which of the following will not survive in the presence of oxygen?
A. Constitutive anaerobe
C. Constitutive aerobe.
B. Facultative anaerobe
D. Obligate anaerobe
- Q.104** Which of the following statement is incorrect regarding germ theory of diseases postulated by Robert Koch?
A. A specific organism can always be found in association with a given disease
B. The organism can be isolated and grown in pure culture in the laboratories
C. It is possible to recover the organism in pure culture from the experimentally infected animals.
D. The pure culture cannot produce the disease when inoculated into susceptible animal
- Q.105** Example of bacteria requiring low concentration of oxygen is:
A. *Spirochete*
C. *Pseudomonas*
B. *Escherichia*
D. *Campylobacter*
- Q.106** Robert Koch discovered bacteria that cause:
A. Tuberculosis and Typhoid
C. Tuberculosis and Measles
B. Tuberculosis and Cholera
D. All of Above
- Q.107** Microscope's ability to distinguish between separate objects that are close together is called?
A. Magnification
C. Contrast
B. Resolving power
D. Scanning power
- Q.108** The nitrifying bacteria are an example of which of the following?
A. Heterotrophic bacteria
C. Chemosynthetic bacteria
B. Saprotrophic bacteria
D. Parasitic bacteria



ANSWER KEY

PROKARYOTES

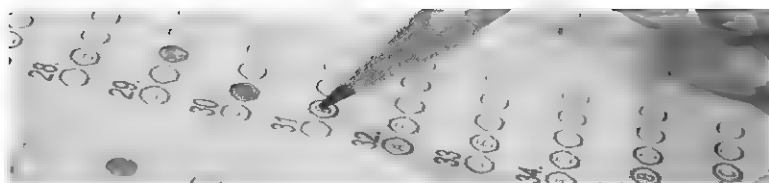
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3	B	23	A	43	C	63	D	83	D	103	D
4	C	24	D	44	D	64	A	84	B	104	D
5	B	25	D	45	C	65	B	85	D	105	D
6	D	26	A	46	A	66	D	86	A	106	B
7	D	27	D	47	D	67	B	87	A	107	B
8	D	28	D	48	D	68	A	88	A	108	C
9	A	29	A	49	A	69	A	89	D		
10	A	30	D	50	D	70	C	90	C		
11	A	31	A	51	D	71	A	91	A		
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15	B	35	B	55	B	75	A	95	D		
16	D	36	D	56	D	76	B	96	C		
17	A	37	A	57	B	77	B	97	C		
18	A	38	B	58	C	78	A	98	D		
19	B	39	C	59	C	79	A	99	D		
20	B	40	C	60	C	80	D	100	B		

REPRODUCTION



Male reproductive system

- Q.1** In the male reproductive tract, sperm cells follow a specific path. Where sperm cells enter after traveling through the epididymis?
 A. Urethra
 C. Ejaculatory duct
 B. Seminiferous tubules
D. Vas deferens
- Q.2** The epididymis, vas deferens, and urethra are a series of ducts found in which body system?
 A. Endocrine
 C. Digestive
 B. Lymphatic
D. Male reproductive
- Q.3** Sperms are produced in:
 A. Urethra
 C. Sperm duct
 B. Pancreas
D. Testis
- Q.4** Spermatids differentiate into:
A. Spermatozoa
 C. Primary oocyte
 B. Mature sperms
 D. Secondary spermatocyte
- Q.5** The primary spermatocytes undergo meiotic division to form:
 A. Spermatozoa
 C. Primary oocyte
B. Secondary spermatocyte
 D. Mature sperms
- Q.6** Which one of the following is most likely to occur in a boy during puberty?
 A. He produces eggs
 C. Color of his eyes changes
 B. His shoulders broaden
D. None of the above
- Q.7** Protection and nourishment of sperms are provided by:
A. Fluid secreted by sertoli cells
 C. Fluid in scrotum
 B. Interstitial fluid
 D. All of the above
- Q.8** In mammalian male, the reproductive and excretory system share the same:
 A. Vas deferens
 C. Ureter
 B. Urinary bladder
D. Urethra
- Q.9** Human sperm moves by:
A. Flagella
 C. Pilli
 B. Cilia
 D. All of these
- Q.10** The sperm duct from each side passes into which of the following?
 A. Ureter
 C. Testes
B. Urethra
 D. Abdominal cavity
- Q.11** Sperms are developed at what temperature?
A. Lower than body temperature
 C. Body temperature
 B. Higher than body temperature
 D. All of these
- Q.12** What is the name of the tube that carries sperm and urine out of the human body?
 A. Penis
C. Urethra
 B. Seminal vesicles
 D. Ureter
- Q.13** The highly complex duct system in male is called:
 A. Scrotum
 C. Prepuce
B. Seminiferous tubules
 D. Epididymis
- Q.14** The cells that secrete testosterone
 A. Nerve cells
 C. Muscle cells
 B. Fat cells
D. Interstitial cells
- Q.15** Select the function/s of male reproductive system:
 A. To produce enzymes
 C. To produce sperms
 B. To transfer sperms to the female
D. Both B and C are correct
- Q.16** The spermatic cord and spermatic duct are?
 A. Same
 C. Same in function
B. Different
 D. Same in location
- Q.17** Fluid secreted by sertoli cells provides sperms with which of the following?
 A. Liquid medium
 C. Protection
 B. Nourishment
D. All
- Q.18** The sperm duct open into which of the following?
 A. Ureter
B. Urethra



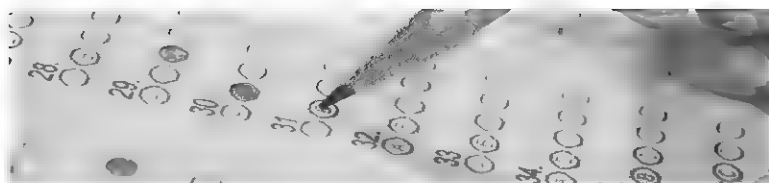
- C. Testes
D. All of these
- Q.19 All of the following statements are correct except:**
A. The testicles produce millions of sperm.
B. Hormones are produced by the testicles.
C. Semen is produced in the seminal vesicles
D. All males are born with one testicle
- Q.20 The scrotum is responsible for which of the following in the male reproductive system?**
A. Synthesis of sperm
B. Lubrication
C. Nourishment of sperm
D. Temperature regulation
- Q.21 Which of the following is not a true characteristic of spermatogonia?**
A. They develop into primary spermatocytes through mitosis
B. They are undifferentiated
C. They are germ line cells
D. They are haploid
- Q.22 The number of spermatids produced from primary spermatocytes is?**
A. 1
B. 3
C. 3
D. 4
- Q.23 Where does the human body store spermatozoa?**
A. Ejaculatory duct
B. Seminal vesicle
C. Seminiferous tubules
D. Epididymis
- Q.24 The male gonads are known as?**
A. Testes
B. Testosterone
C. Ovaries
D. Ovum
- Q.25 The hormone that is released from the testes is?**
A. Progesterone
B. Estrogen
C. Testosterone
D. All of these
- Q.26 Sperms are nourished and activated through?**
A. Vas deferens
B. Prostate gland
C. Semen
D. All of these
- Q.27 External genitalia of human male consist of a pair of testes which lie outside the body in the sac like?**
A. Bag
B. Scrotum
C. Pouch
D. All of these
- Q.28 Which of the following is found beneath the prostate gland?**
A. Vas deferens
B. Seminal vesicle
C. Urethra
D. Cowper's gland
- Q.29 Fluid secreted by three sets of glands combines with sperm to form:**
A. Interstitial fluid
B. Semen
C. Amniotic fluid
D. Both A and B
- Q.30 External male genitalia are:**
A. A pair of testes
B. Seminiferous tubules
C. Male copulatory organ
D. Both A and C
- Q.31 In male reproductive system which gland neutralizes the pH of urethra?**
A. Ejaculatory gland
B. Prostate gland
C. Seminal vesicle gland
D. Bulbourethral gland
- Q.32 How many million sperms are produced in human per day?**
A. 10
B. 20
C. 30
D. 400
- Q.33 Sperm secrete which enzyme?**
A. Acrosome
B. Hyaluronidase
C. Lipase
D. Both A and B
- Q.34 Which of these transports sperm from the testis to the penis?**
A. Sperm duct
B. Sacrotum
C. Urethra
D. Gamete



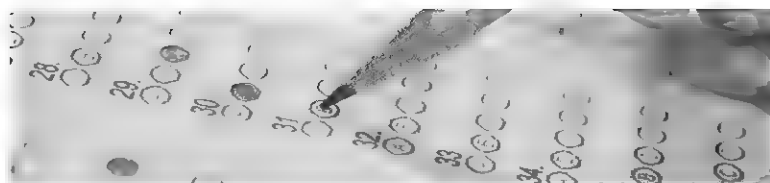
- Q.35 What is a key difference between spermatogenesis and oogenesis?**
 A. Spermatogenesis results in only 1 sperm; oogenesis results in 4 eggs.
 B. Spermatogenesis results in 2 sperm; oogenesis results in only 1 egg.
 C. Spermatogenesis results in 8 sperm; oogenesis results in only 4 eggs.
D. Spermatogenesis results in 4 sperm; oogenesis results in only 1 egg

Female reproductive system (including menstrual cycle)

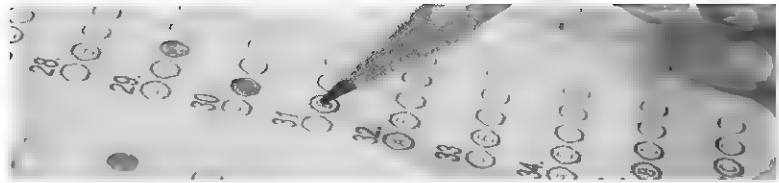
- Q.36 Human embryo is called fetus from the beginning of?**
 A. 2nd month
 B. **3rd month**
 C. 4th month
 D. 5th month
- Q.37 Fusion of male and female gametes is called:**
A. Fertilization
 B. Implantation
 C. Development
 D. Growth
- Q.38 Ovum receive sperm at:**
A. Animal pole
 B. Vegetal pole
 C. Both A and B
 D. None of these
- Q.39 Another name for the sex cell is:**
 A. Hormone
B. Gamete
 C. Zygote
 D. Testicle
- Q.40 Follicular phase ranges from _____ days.**
 A. 1-5
 B. 15-28
 C. 11-15
D. 6-14
- Q.41 During 6-28 days of menstrual cycle, _____ is thickened.**
 A. Epiderm
 B. Myometrium
C. Endometrium
 D. Epimetrium
- Q.42 Secondary oocyte maturation takes place in:**
 A. Ovary
 B. Uterus
 C. Cervix
D. Fallopian tube
- Q.43 Proliferative phase lasts for _____ days.**
 A. 1-5
B. 5-13
 C. 15-28
 D. 16-18
- Q.44 Placenta is established between:**
A. Uterine and foetal tissues
 B. Uterine and cervix
 C. Cervix and vagina
 D. Ovary and oviduct
- Q.45 In 16-28 days _____ takes place.**
 A. Shedding to uterus
B. Thickening of uterus wall
 C. Development of follicle
 D. Implantation
- Q.46 After fertilization the zygote increases in size and travels down the fallopian tube to become embedded in the walls of the womb. This process is called:**
 A. Ovulation
 B. Conception
C. Implantation
 D. Menstruation
- Q.47 Which of these cycles operate in human females?**
 A. Oestrous cycle
B. Menstrual cycle
 C. Both A and B
 D. None of these
- Q.48 Which does not occur in females at the puberty?**
A. Voice deepens
 B. Pubic hair growth
 C. Hips broadens
 D. Start of menstrual cycle
- Q.49 Between the seminiferous tubules are interstitial cells which secrete which of the following hormone?**
 A. Progesterone
 B. Oxytocin
C. Testosterone
 D. Estrogen
- Q.50 Development of primary follicles is induced by:**
 A. LH
 B. Estrogen
C. FSH
 D. Progesterone
- Q.51 Labor pains are induced by:**



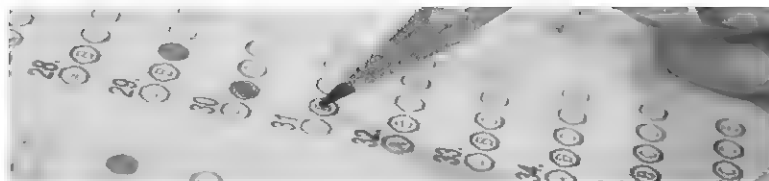
- A. Placenta disintegration
C. Secretion of oxytocin
- Q.52 Which of the following would not be expected during pregnancy?**
A. Maintenance of the corpus luteum
C. Blastocyst implantation
B. Distension of cervix
D. Estrogen production
B. Formation of the placenta
D. Formation of the corpus albicans
- Q.53 In humans, fertilization involves the addition of chromosomes from the sperm and the egg. The resulting cell is called a?**
A. Zygote
C. Embryo
B. Egg
D. Fetus
- Q.54 Which characteristic is not in human girls if she is young?**
A. Menopause
C. Huge hips
B. Menarche
D. Hairs
- Q.55 Test tube helps in:**
A. In vitro fertilization
C. Both A and B
B. In vivo fertilization
D. Ex vitro fertilization
- Q.56 Sex is determined after:**
A. 4-8 months
C. 6-8 months
B. 2-3 months
D. 8 months
- Q.57 Lactation is stimulated by:**
A. LTH
C. Placenta
B. Lactogen
D. ALL A, B, C
- Q.58 In humans placenta is established by:**
A. Hypothalamus
C. Thalamus
B. Progesterone
D. Estrogen
- Q.59 The time in a woman's life when menstruation usually no longer occurs:**
A. Late 50s
C. Teens
B. Mid 40s
D. Early 20s
- Q.60 The organs that produce reproductive cells are known as?**
A. Gametes
C. Glands
B. Gonads
D. Follicles
- Q.61 When a female ovulates, in what phase of division is the oocyte?**
A. Anaphase I
C. Metaphase I
B. Prophase I
D. Metaphase II
- Q.62 The number of chromosomes in a zygote are?**
A. n
C. 3n
B. 2n
D. 4n
- Q.63 The uterine tube opens into:**
A. Ovary
C. Oviduct
B. Ureters
D. None of these
- Q.64 Fertilization of ovum occurs during which of the following?**
A. In uterus
C. In distal part of oviduct
B. In ovary
D. In proximal part of oviduct
- Q.65 Which is the largest cell in the human body?**
A. Macrophage
C. Granule cell
B. Ovum
D. None of These
- Q.66 Oogenesis starts:**
A. From puberty
C. At adult stage
B. At menarche
D. Before birth
- Q.67 It does not occur in female during menstruation:**
A. Breast enlargement
C. Fatigue
B. Broadening of shoulder
D. Bloating
- Q.68 Disturbance in _____ may lead to miscarriage or premature birth.**
A. LH
C. FSH
B. Progesterone
D. Estrogen
- Q.69 The oviduct is also called as:**



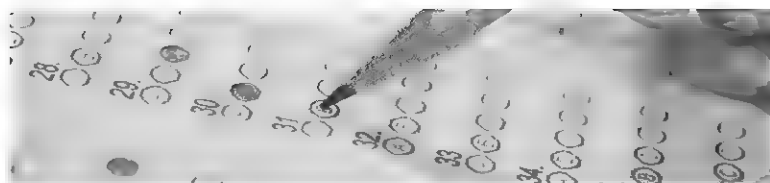
- A. Fallopian tube
C. Both A and B
- Q.70 Placenta is important as its function is to:**
A. Exchange oxygen
C. Exchange nutrients
B. Exchange carbon dioxide
D. All A, B and C are correct
- Q.71 In human female, the fertilized egg gets implanted in uterus:**
A. After about 7 days of fertilization
B. After about 30 days of fertilization
C. After about two months of fertilization
D. After about 3 weeks of fertilization
- Q.72 The union of meiotically produced specialized sex cells from each parents produce?**
A. Fertilized egg
C. Zygote
B. Porifera
D. None of these
- Q.73 2nd meiotic division in oocyte is completed during?**
A. When ovum is discharged from the ovary
C. Before the onset of menstruation
B. Just before fertilization
D. When oocyte is fertilized by sperm
- Q.74 The end or complete stop of the menstrual cycle is called:**
A. Ovulation
C. Fertilization
B. Menopause
D. Menstruation
- Q.75 Endometrium stimulation and vascularization is done by**
A. Estrogen
C. FSH
B. Progesterone
D. LH
- Q.76 The internal lining of the uterus wall is called:**
A. Endometrium
C. Corpus luteum
B. Perimetrium
D. None of these
- Q.77 Which factors affect the female reproductive cycle?**
A. Malnourishment
C. Both A and B
B. Emotional stress
D. None of these
- Q.78 An egg is fertilized in laboratory and implanted in uterus for development. This is called:**
A. Test tube baby
C. In vitro fertilization
B. Cloning
D. Both A and B
- Q.79 Which one of the following is not part of the female reproductive system?**
A. Ovary
C. Urethra
B. Vagina
D. Uterus
- Q.80 Germ cells in the ovary produce many?**
A. Spermatogonia
C. Zygosporos
B. Oogonia
D. Eggs
- Q.81 The proximal part of the oviduct is significant because:**
A. Fertilization occurs here
C. Placenta is established here
B. Implantation occurs here
D. None of these
- Q.82 Secondary oocyte is ovulated from:**
A. Corpus luteum
C. Primary follicle
B. Graafian follicle
D. Germinal epithelium
- Q.83 Which hormone is produced mainly by corpus luteum in the ovary following ovulation?**
A. Progesterone
C. FSH
B. Chorionic gonadotrophic hormone
D. LH
- Q.84 Nutrition to egg in ovary is provided by which of the following?**
A. Germ cells
C. Follicle cells
B. Milk cells
D. All of these
- Q.85 Uterus opens into the vagina through:**
A. Uterus
C. Oviduct (fallopian tube)
B. Cervix
D. Ovary
- Q.86 In a typical menstrual cycle of 28 days, what is the most likely fertile period?**



- A. Days 5 to 10
C. Days 14 to 15
- Q.87** The discharge of ovum from ovary is called:
A. Lactation
C. Placenta formation
B. Ovulation
D. Menstruation
- Q.88** Urethra and vagina have openings to the exterior:
A. Common
C. Both A and B
B. Independent
D. None of these
- Q.89** What event occurs in the menstrual cycle when the level of progesterone declines?
A. Ovulation
C. Menopause
B. Menstruation
D. Fertilization
- Q.90** Which cells produce oogonia in ovary?
A. Stromal cells
C. Germ cells
B. Epithelial cells
D. theca cells
- Q.91** The period during which a girl sexually matures is called:
A. Menstrual cycle
C. Childhood
B. Puberty
D. Teens
- Q.92** Average loss of blood during birth is about how many cm³?
A. 250
C. 350
B. 300
D. 400
- Q.93** Gametes in animals are produced by which of the following?
A. Mitosis
C. Fission
B. Meiosis
D. All
- Q.94** The uterus of the female reproductive system opens into the?
A. Placenta
C. Cervix
B. Birth canal
D. All of these
- Q.95** During birth which of following act as birth canal?
A. Oviduct
C. Uterus
B. Ovary
D. Vagina
- Q.96** The event happens in menstrual cycle when level of progesterone declines:
A. Ovulation
C. Corpus luteum formation
B. Beginning of menses
D. Maturation of ovarian follicle
- Q.97** Which term refers to the formation of egg cells that begins in the developing ovaries of a female fetus?
A. Meiosis
C. Fertilization
B. Ovulation
D. Oogenesis
- Q.98** Human embryo remains enclosed in:
A. Amniotic sac
C. Chorion
B. Amnion
D. Allantois
- Q.99** The time when the sex organs start to become active is called:
A. The fertile period
C. Pregnancy
B. Adulthood
D. Puberty
- Q.100** Which one of the following statements is incorrect?
A. Eggs in the ovaries ripen when they meet a sperm
B. Girls are born with thousands of eggs in their ovaries
C. Hormones control the release of the egg from the ovary
D. One egg is released from the ovary about every month
- Q.101** Which of the following is not a true characteristic of gametocytes?
A. Male gametocytes are called spermatocytes
B. Gametocytes divide by mitosis into other gametocytes
C. Female gametocytes are called oocytes
D. They are eukaryotic somatic cells
- Q.102** The human menstrual cycle generally repeats after how many days?
A. 20 days
C. 10 days
B. 28 days
D. 40 days
- Q.103** The total gestation period (pregnancy) is usually about:



- A. 28 days
C. 280 days
- Q.104 Sexual characteristics in females develop during?**
A. Menstruation
C. Puberty
B. Ovulation
D. Birth
- Q.105 In female reproductive system, ovulation starts:**
A. After menstruation
C. After secretory phase
B. After proliferative phase
D. Before proliferative phase
- Q.106 Which of the following is not a secondary character in females?**
A. Shoulders broaden
C. Enlarge breast
B. Egg production
D. None of these
- Q.107 Proliferative phase is also called:**
A. Menstrual phase
C. Secretory phase
B. Secondary phase
D. None of these
- Q.108 In human only one ovum is usually discharged from the ovary at one time this phenomenon is called?**
A. Ovulation
C. Oestrous
B. Menstruation
D. All of these
- Q.109 In which week of pregnancy organogenesis starts:**
A. 12th
C. 14th
B. 8th
D. 16th
- Q.110 During menstruation, which of the following sheds off?**
A. Epimetrium
C. Both
B. Endometrium
D. Myometrium
- Sexually transmitted diseases**
- Q.111 During birth central nervous system of infants can be damaged by:**
A. Syphilis
C. Gonorrhoea
B. Genital herpes
D. HPV
- Q.112 The sexually transmitted disease caused by *Treponema pallidum* is:**
A. Syphilis
C. Genital Herpes
B. Gonorrhoea
D. AIDS
- Q.113 Gonorrhoea is caused by _____.
A. Gram positive bacteria
C. Both A and B
B. *Neisseria gonorrhoea*
D. None**
- Out of Syllabus**
- Q.114 Which of the following is an ovoviviparous organism?**
A. Reptiles
C. Frog
B. Mammals
D. Duckbill platypus
- Q.115 The animals which involves development of embryo inside female body are called:**
A. Internal fertilization
C. Oviparous
B. Viviparous
D. Both A & B
- Q.116 Asexual reproduction requires only a single parental organism which gives rise to offspring by?**
A. Meiotic cell division
C. Both A and B
B. Mitotic cell division
D. None of these
- Q.117 Cryptorchidism is a condition where?**
A. One of both testes are not developed
B. One or both testes fail to descend into the scrotum
C. One or both testes are not formed
D. None of these
- Q.118 In viviparous animals:**
A. External fertilization leads to embryo formation
B. Internal fertilization leads to embryo formation
C. External development leads to embryo formation
D. None of the above



- Q.119** Off springs produced as a result of asexual reproduction are:
 A. Similar to parents
 B. Identical to parents
 C. Different to parents
 D. None of these
- Q.120** Parthenocarpy is induced by:
 A. Gibberellins
 B. Auxins
 C. Cytokinins
 D. Absciscic acid
- Q.121** Which is a viviparous?
 A. Duck
 B. Goat
 C. Frog
 D. Lizard
- Q.122** In cloning , nucleus is implanted in:
 A. Zygote
 B. Egg cell
 C. Sperm
 D. Somatic cell
- Q.123** Sperms have origin?
 A. Ectodermal
 B. Mesodermal
 C. Endodermal
 D. None of these
- Q.124** Development of an egg into zygote without fertilization is called?
 A. Parthenocarpy
 B. Apomixes
 C. Parthenogenesis
 D. All of these
- Q.125** In sexual reproduction, plants have diplohaplontic life cycle with alternating?
 A. Haploid sporophyte and diploid gametophyte generations
 B. Diploid sporophyte and diploid gametophyte generations
 C. Haploid sporophyte and haploid gametophyte generations
 D. Diploid sporophyte and haploid gametophyte generations
- Q.126** A woman receives her X chromosome from:
 A. Her mother only
 B. Both her mother and her father
 C. Her father only
 D. Extra nuclear DNA in her mother's egg
- Q.127** To overcome infertility, which technique is used:
 A. In vitro fertilization
 B. In vivo fertilization
 C. Both A and B
 D. None of these
- Q.128** Which lytic enzyme is released by the sperm?
 A. Trypsin
 B. Helicase
 C. Testosterone
 D. Hyaluronidase
- Q.129** The animals in which there are separate male and female individuals are called?
 A. Unisexual
 B. Bisexual
 C. Asexual
 D. Hermaphrodite
- Q.130** Which method is of asexual reproduction?
 A. Sporulation
 B. Apomixes
 C. Fission
 D. All of these
- Q.131** What is an example of an oviparous mammal?
 A. Penguin
 B. Spiny anteater
 C. Shark
 D. Elephant
- Q.132** Which characteristic is not of identical twins?
 A. Produced by separation of two blastomeres
 B. Produced asexually
 C. Produced when embryo is at two cell stage
 D. Have different genetic makeup
- Q.133** Viviparous animals are those in which?
 A. Internal fertilization with external development in eggs
 B. Internal fertilization and internal development followed by hatching of egg
 C. External fertilization with external development
 D. Internal fertilization with internal development inside female body
- Q.134** In asexual reproduction offspring are genetically?
 A. Identical to the parents
 B. Identical if mutations do not occur.
 C. Non identical to the parents
 D. Both A and B



ANSWER KEY

REPRODUCTION

1	D	21	D	41	C	61	D	81	A	101	D	121	B
2	D	22	D	42	D	62	B	82	B	102	B	122	B
3	D	23	D	43	B	63	C	83	A	103	C	123	D
4	A	24	A	44	A	64	D	84	C	104	C	124	A
5	B	25	C	45	B	65	B	85	B	105	B	125	D
6	D	26	D	46	C	66	D	86	C	106	B	126	B
7	A	27	B	47	B	67	B	87	B	107	D	127	A
8	D	28	C	48	A	68	B	88	B	108	A	128	D
9	A	29	B	9	C	69	C	89	B	109	B	129	A
10	B	30	D	50	C	70	D	90	C	110	B	130	D
11	A	31	D	51	C	71	A	91	B	111	A	131	D
12	C	32	D	52	D	72	C	92	C	112	A	132	D
13	B	33	D	53	A	73	D	93	B	113	C	133	D
14	D	34	A	54	A	74	B	94	B	114	D	134	A
15	D	35	D	55	A	75	A	95	D	115	D		
16	B	36	B	56	B	76	A	96	B	116	B		
17	D	37	A	57	D	77	C	97	D	117	B		
18	B	38	A	58	B	78	C	98	B	118	B		
19	D	39	B	59	D	79	C	99	D	119	B		
20	D	40	D	60	B	80	B	100	a	120	B		



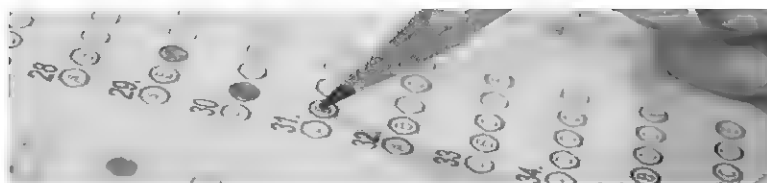
SUPPORT AND MOVEMENT

Cartilage

- Q.1 Cartilage is a form of:**
A. Cardiac tissue
C. Epithelial tissue
B. Connective tissue
D. Nervous tissue
- Q.2 Which type of cartilage is the most abundant in human body?**
A. Hyaline cartilage
B. Elastic cartilage
C. Fibrocartilage
D. None of these
- Q.3 Which of the following is not an important function of bone?**
A. Regulation of ion concentration
C. Organ and nerve protection
B. Muscular contraction
D. Regulation of pH through hydration
- Q.4 Which of the following cells secrete flexible, elastic, non-living matrix collagen?**
A. Osteocytes
D. Chondrocytes
B. Osteoclasts
D. Osteoblasts
- Q.5 Cartilage has living cells that are called:**
A. Osteocytes
C. Osteoclasts
B. Osteoblasts
D. Chondrocytes
- Q.6 What is not true about cartilage?**
A. There are many blood vessels in the cartilage
B. It is a form of connective tissue
C. It covers ends of the bone at the joint
D. Both A and B
- Q.7 What are osteocytes?**
A. White blood cell
C. Brain cell
B. Bone cell
D. None of these
- Q.8 Hyaline cartilage forms joint between:**
A. Growing bone
C. Lamellar bone
B. Mature bones
D. Secondary bone
- Q.9 Accumulation of crystals in cartilage is called:**
A. Osteoarthritis
C. Pseudogout
B. Gout
D. None
- Q.10 The fibrous connective tissue which attaches bone to bone is called:**
A. Tendon
C. Reticular tissue
B. Ligament
C. Cartilage

Types of muscles

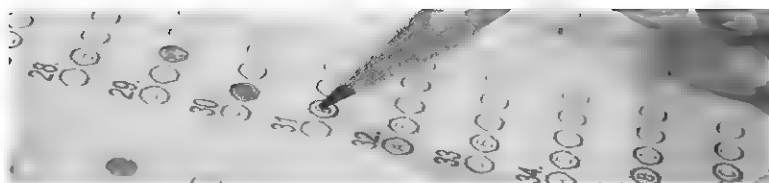
- Q.11 Which one of the following is not a character of cardiac muscles?**
A. Striated and branched
C. Self-excitatory
B. Multinucleated
D. None of these
- Q.12 Muscles are composed of:**
A. Silica
C. Group of cell fibers
B. Polyester threads
D. Calcium and phosphorus
- Q.13 Skeletal muscles are made up of:**
A. Actin
C. Both A & B
B. Myosin
D. Actin, myosin and tropomyosin
- Q.14 Cardiac muscles differ from skeletal muscles by which of the following property?**
A. Structure
C. Calcium binding protein
B. Involuntary control
D. Sarcotubular system
- Q.15 Vertebrates have which of the following?**
A. Cardiac muscles
C. Smooth muscles
B. Skeletal muscles
D. ALL A, B, C
- Q.16 It is a property of cardiac myocytes:**
A. Voluntary control
C. Fatigue resistance
B. Unstripped
D. Spindle shaped cell



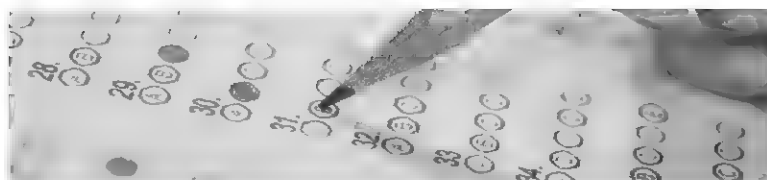
- Q.17 Why skeletal muscles are called striated muscles?**
 A. Appear darker than smooth muscles by naked eye
 B. Alternating dark and light bands appear on their surface when visualized by naked eye
C. Alternating dark and light bands appear on their surface when visualized via a microscope
 D. All of these
- Q.18 Smooth muscles, cardiac muscles and organs are regulated by which of the following?**
 A. Central nervous system
 B. Parasympathetic nervous system
 C. Sympathetic nervous
D. Autonomic system
- Q.19 Striated skeletal muscle cells are under:**
A. Voluntary control
 B. Involuntary control
 C. Both A and B
 D. None of these
- Q.20 Which of the following muscle fiber contains single nucleus?**
A. Smooth muscle
 B. Cardiac muscle
 C. Both A and B
 D. Skeletal muscle
- Q.21 Which of the following grouping is incorrect?**
 A. Skeletal, striated, voluntary
 B. Cardiac, striated, involuntary
C. Cardiac, striated, voluntary
 D. Both B and C
- Q.22 An entire skeletal muscle is surrounded by:**
 A. Sarcolemma
 B. Microtubules
 C. Both A and B
D. Epimysium
- Q.23 The fibrous connective tissue which attaches muscle to bone is called:**
A. Tendon
 B. Ligament
 C. Reticular tissue
 D. Cartilage
- Q.24 What is true about skeletal muscle cell?**
A. It has light and dark band
 B. It has only one nucleus
 C. It is under involuntary control
 D. None of these
- Q.25 It is present in cardiac muscles but absent in smooth muscles:**
 A. Tropomyosin
 B. Actin
C. Troponin
 D. Myosin
- Q.26 Which of the following muscles is involuntary and non-striated?**
 A. Skeletal muscle
B. Smooth muscle
 C. Cardiac muscle
 D. None
- Q.27 Which is not true for cardiac muscle?**
A. No distinct nucleus
 B. Branched
 C. Involuntary
 D. Intercalated disc
- Q.28 Unique feature of cardiac muscle cell is:**
A. Intercalated disc
 B. Involuntary
 C. Striation
 D. All
- Q.29 Skeletal muscle associated with skeleton form:**
 A. Body movement
 B. ATP
C. Skeletal system
 D. Heat
- Q.30 Cardiac muscles are found in:**
 A. Gut
B. Heart
 C. Bladder
 D. Limbs

Structure of skeletal muscles

- Q.31 What structure marks the separation between two sarcomeres?**
 A. I band
 B. H zone
 C. A band
D. Z disc
- Q.32 Skeletal muscle is composed of?**
 A. Muscle fibrin
B. Muscle fibers
 C. Sarcomere
 D. None of these
- Q.33 Sarcoplasm of the muscle fiber is similar to**
A. Cytoplasm of other cell
 B. Nucleoplasm
 C. Mitochondria
 D. Cell membrane



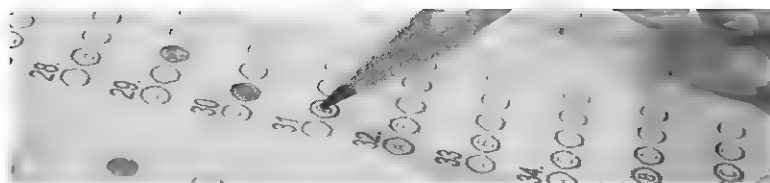
- Q.34 Sarcomere attach end to end to form:**
A. Myofibril
C. Muscle fiber
B. Muscles
D. None of these
- Q.35 Line at center of A band is:**
A. Z line
C. H zone
B. M line
D. I band
- Q.36 Which of the following is anisotropic?**
A. A band
C. M line
B. I band
D. Z line
- Q.37 Region between two successive Z lines is:**
A. Sarcomere
C. M line
B. H zone
D. A band
- Q.38 Cross bridges are found on:**
A. Actin
C. Troponin
B. Myosin
D. Tropomyosin
- Q.39 The main unit of thick filament is:**
A. Myofibril
C. Myosin
B. Actin
D. Z-line
- Q.40 Myosin filaments are how many times thick as compared to actin filament?**
A. 3 times
C. 4 times
B. 6 times
D. 8 times
- Q.41 Which of the following is not true about muscle fibers?**
A. Better developed for slow sustained activities
B. For energy, they depend on anaerobic procedures
C. Myoglobin content is high
D. Possess mitochondria in huge numbers
- Q.42 A smallest contractile unit of muscle contraction called sarcomere is the area between two?**
A. H zone
C. Z line
B. M line
D. Z zone
- Q.43 Which of the following is true about sarcomeres?**
A. Actin filaments are only found in the I band
B. The sarcomeres contribute to the striated appearance of smooth muscle cells
C. Sarcomeres are functional units of skeletal and smooth muscle cells
D. A band contains both actin and myosin filaments
- Q.44 What is located at both sides of the A band?**
A. Z-line
C. I band
B. H zone
D. Z zone
- Q.45 Which of the following occurs during muscular contraction?**
A. Actin slides over myosin
C. Calcium ions are involved
B. ATP supplies energy
D. All of these
- Q.46 Which of the following is true about the organization of actin filaments and myosin in sarcomeres?**
A. Myosin filaments appear thinner than actin filaments
B. Prior to contraction, there is no overlap between actin and myosin
C. The degree of overlap of actin and myosin affects the overall contraction
D. All of these
- Q.47 Which of the following is the name of the modified endoplasmic reticulum found in muscle cells?**
A. T-tubule
C. Cytoplasmic reticulum
B. Sarcomere
D. Sarcoplasmic reticulum
- Q.48 Muscles are composed of?**
A. Silica
C. Groups of cell fibers
B. Polyester threads
D. Calcium and phosphorous



- Q.49** How many thin filaments are arrayed around each thick filament within a sarcomere?
A. 2
C. 6
B. 4
D. 8
- Q.50** Dark bands of skeletal muscles are:
A. Z-band
C. I band
B. A band
D. H zone
- Q.51** How much of the body heat is produced by muscle tissue?
A. 15%
C. 30%
B. 55%
D. 85%
- Q.52** A disc-like protein that is centrally found in sarcomeres is:
A. H line
C. M line
B. I line
D. Z line
- Q.53** The functional unit of contractile system in striated muscle is:
A. Myofibril
C. Z band
B. Cross bridges
D. Sarcomere
- Q.54** The length of the following is reduced when muscle contracts:
A. H-zone
C. Sarcomere
B. I-band
D. Both A & B
- Q.55** The contractile protein of skeletal muscle involving ATPase activity is:
A. Actin
C. Troponin
B. Myosin
D. Tropomyosin
- Q.56** Many sarcomeres in series make up the length of a:
A. Microtubules
C. Myosin filament
B. Myofibril
D. M-line
- Q.57** Which is most likely to extend the entire length of a muscle fiber?
A. Sarcomere
C. Myosin filament
B. Myofibril
D. M-line
- Q.58** The A band further divides by:
A. Z-line
C. H zone
B. A band
D. Z zone
- Q.59** A muscle of fascicle is a:
A. Bundle of connective tissue
C. Bundle of muscle fibres
B. Bundle of myofibrils
D. Muscle cells
- Q.60** The space between two Z lines constitutes the:
A. Sarcolemma
C. Sarcoplasm
B. Sarcophagus
D. None of these
- Q.61** Bright region in A band is:
A. M line
C. H zone
B. Z line
D. Sarcomere
- Q.62** Myofilament is made of:
A. Protein
C. Carbohydrates
B. Lipids
D. All of these
- Q.63** Major regulatory protein in muscle is:
A. Myosin
C. Troponin-tropomyosin
B. Myosin-actin
D. Troponin-tropomyosin-actin
- Q.64** Sarcoplasm is different from cytoplasm:
A. It contains sarcoplasmic reticulum
B. It contains glycogen
C. It contains glycogen and oxygen binding protein, myoglobin
D. All of these

Mechanism of skeletal muscle contraction

- Q.65** According to sliding filament theory of muscle contraction, which of the following are functions of ATP?
A. ATP does all of these things during muscle contraction



- B. It allows the myosin head to detach from the actin filament**
C. It moves tropomyosin off of actin binding sites
D. Both A and B
- Q.66 What type of enzyme is myosin?**
A. ATP synthase **B. ATP hydrolase**
C. ADP hydrolase D. ADP synthase
- Q.67 Which of the following proteins does not play a fun force-tension curve of muscle contraction?**
A. Titin B. Myosin
C. Actin C. All of these
- Q.68 Calcium during muscle contraction binds with:**
A. Tropomyosin **B. Troponin C**
C. Troponin I D. Troponin T
- Q.69 When a muscle fiber shortens, the following shortens:**
A. Actin filament B. Sarcomere
C. Both A and B D. Myosin
- Q.70 Rigor mortis after death results due to which?**
A. Decrease in body temperature after death. B. B.
B. Accumulation of rigid proteins molecules in sarcoplasm
C. Death of tissue due to unavailability of O₂.
D. Unavailability of ATP, which is necessary to break
- Q.71 What is hydrolysed during muscle contraction?**
A. ACP B. ADP
C. NAD **D. ATP**
- Q.72 Actin and myosin are _____ proteins.**
A. Globular **B. Fibrous**
C. Functional D. Both A and B
- Q.73 Skeletal muscles cause:**
A. Constriction of blood vessels B. Heart beat
C. Dilation of pupil **D. Eye movement**
- Q.74 Which of the following is true of troponin and tropomyosin?**
A. Troponin binds to myosin and tropomyosin binds to actin
B. Tropomyosin binds to actin and prevents the myosin head from binding to actin
C. Both a and b
D. None of these
- Q.75 How many ATP are required for one cycle of muscle contraction and relaxation?**
A. 1 B. 3
C. 2 D. 4
- Q.76 The contraction of muscle by actin and myosin is described by which biological theory?**
A. Endosymbiotic theory
B. Central Dogma theory
C. Cross-bridge theory
D. Sliding filament theory
- Q.77 The muscle which moves a body part away from the midline of the body is:**
A. Flexor muscles B. Extensor muscles
C. Adductor muscles **D. Abductor muscles**
- Q.78 During a muscular contraction, which of the following elements maintains constant length?**
A. I band B. H zone
C. A band D. Sarcomere
- Q.79 Which of the following step occurs immediately after binding of Ca²⁺ with troponin molecule during muscle contraction?**
A. Binding sites of actin get attached to the myosin head
B. Troponin uncovers the actin binding sites



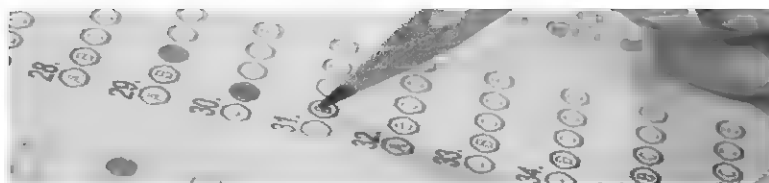
- C. Ca^{2+} goes back inside sarcoplasmic reticulum
D. Tropomyosin gets removed from the binding sites of actin filaments
- Q.80** What occurs when the thin actin and thick myosin filaments slide past each other?
 A. Muscle relaxation
B. Muscle contraction
 C. Muscle twitch
 D. None of these
- Q.81** The muscle which moves a body part towards the midline of the body is:
 A. Flexor muscles
 B. Extensor muscles
C. Adductor muscles
 D. Abductor muscles
- Q.82** Which of the following action is caused by skeletal muscle:
 A. Constriction of blood vessel
B. Eye movements
 C. Heartbeat
 D. Dilation of pupil
- Q.83** Which of the following molecules binds to troponin during muscle contraction, triggering tropomyosin to move away from the actin binding sites and allowing the myosin head to form a cross bridge?
 A. ADP
B. Calcium
 C. Sodium
 D. ATP
- Q.84** What is the purpose of calcium in the muscles?
 A. It helps move the myosin head into a high-energy position
B. It allows tropomyosin to be pulled away from the actin filament
 C. Both a and b
 D. None of these
- Q.85** Which of the following proteins directly interacts with the myosin-binding site on actin?
A. Tropomyosin
 B. Troponin
 C. both a and b
 D. none of these
- Q.86** Which of the following sections of a sarcomere does not shorten during contraction?
 A. I band
 B. H zone
C. A band
 D. None of these
- Q.87** Which of the following does not occur during skeletal muscle contraction?
 A. ATP is hydrolysed
B. Calcium binds to myosin heads
 C. Both A and B
 D. None of these
- Q.88** Which two proteins are the major components of myofibrils, allowing for muscle fibre contraction?
 A. Myosin and cartilage
B. Actin and myosin
 C. Lamellae and actin
 D. Only myosin
- Q.89** Tropomyosin binds to _____ and prevents the myosin from sliding up the actin filament.
 A. Myosin
B. Actin
 C. Myosin filament
 D. Both B and C
- Q.90** Nerves that are innervating muscle fibers are called:
 A. Sensory nerves
B. Motor neurons
 C. Cranial nerves
 D. Optic nerve
- Q.91** Which disappears during muscles contractions?
 A. M line
B. H zone
 C. Z line
 D. A band
- Q.92** Role of sarcoplasmic reticulum prior to muscle contraction:
 A. It actively pumps calcium ions into its lumen
B. It releases calcium ions by active transport
 C. It creates the proteins needed to cover the actin filaments
 D. It releases calcium once an action potential reaches the sarcolemma

Types of joints

- Q.93** Which of the following movements are possible in pivot joint?
 A. Flexion and extension
 B. Adduction and abduction
C. Rotation
 D. Extension flexion and rotation
- Q.94** Type of synovial joints:
 A. Hinge joint
 B. Ball and socket joint



- C. Both A and B**
- Q.95 Humerus forms joints with:**
A. Clavicle
C. Hyoid
D. Fibrous joint
B. Sternum
D. Tibia
- Q.96 Which joint is present in neck, due to which it shows movement?**
A. Pivot joint
C. Hinge joint
B. Saddle joint
D. Ball and socket joint
- Q.97 The hinge joint and ball and socket joints are the types of:**
A. Freely movable joints
C. Immovable joints
B. Slightly movable joints
D. None of these
- Q.98 Fluid present in synovial joint is:**
A. Synovial fluid
C. Plural fluid
B. Pericardial fluid
D. Interstitial fluid
- Q.99 Metacarpal joint is an example of:**
A. Condylloid joint
C. Hinge joints
B. Saddle joint
D. Ball and socket joint
- Q.100 The connection between two bones is:**
A. Joint
C. Suture
B. Tendon
D. Fissure
- Q.101 Joints in which both muscle and bone are in same phase angle:**
A. Ball and socket
C. Cartilaginous
D. Hinge joint
B. Fibrous
- Q.102 Which of the following comes under structural classification?**
A. Synchondroses
C. Gomphosis
B. Sutures
D. All of these
- Q.103 Joints are classified on the basis of:**
A. The amount of movement allowed by them
B. Nature of structure they have
C. Type of bones they join
D. Both B and C
- Q.104 Cartilaginous joints have:**
A. Slight movement
C. No movement
B. Free movement
D. Both A and B
- Q.105 A type of joint found at the articulation between teeth and the sockets of the maxilla is:**
A. Syndesmosis
C. Gomphosis
B. Sutures
D. None of these
- Q.106 Humerus forms _____ joint with scapula.**
A. Ball and socket
C. Pivot
B. Hinge
D. Fibrous
- Q.107 Which the following is not the unique features of synovial joint?**
A. Articular capsule
C. Articular cartilage
B. Synovial fluid
D. Fibrocartilage
- Q.108 How many types of joints are present in body?**
A. 3
C. 5
B. 4
D. 2
- Q.109 In cartilaginous joint:**
A. Joint cavity is absent
C. Both A and B
B. Joint cavity is present
D. None
- Q.110 Syndesmosis is present between:**
A. Short bones
C. Short and long bone
B. Long bones
D. Can be present any where
- Q.111 Xiphisternal joint is present between:**
A. Body of clavicle and xiphoid process
C. Body of clavicle and xiphoid process
B. Body of sternum and xiphoid process
D. Body of femur and xiphoid process



Gout and arthritis

Q.112 Inflammation of joint is known as:

- A. Sciatica
- B. Arthritis
- C. Spondylosis
- D. Disc-slip

Q.113 All of the following are inflammatory arthritis except:

- A. Rheumatoid Arthritis
- B. Osteoarthritis
- C. Gouty arthritis
- D. Osteomyelitis

Q.114 Chronic arthritis is:

- A. Rheumatoid arthritis
- B. Osteoarthritis
- C. Gouty arthritis
- D. None

Q.115 Most chronic and inflammatory type of arthritis is:

- A. Osteoarthritis
- B. Rheumatoid arthritis
- C. Gout
- D. None

Q.116 Acute form of arthritis results from:

- A. Fungal attack
- B. Bacterial attack
- C. Viral attack
- D. Protist attack

Q.117 Gout results due to defective metabolism of:

- A. Xanthine dehydrogenase
- B. Xanthine carboxylase
- C. Xanthine hydrogenase
- D. Xanthine oxidase

Q.118 Most common site for autoimmune disease:

- A. Skin and joint
- B. Muscles
- C. A and D
- D. None

Q.119 An example of degenerative disease:

- A. Rheumatoid arthritis
- B. Osteoarthritis
- C. Gouty arthritis
- D. Osteomalacia

Out of Syllabus

Q.120 Sperms of liverworts, mosses, ferns move towards archegonia, in response to nucleic acid released by the ovum. This is an example of?

- A. Chemotropic movement
- B. Chemonastic movement
- C. Haptonastic movement
- D. Chemotactic movement

Q.121 Tibia is found in:

- A. Skull
- B. Lower leg
- C. Face
- D. Upper arm

Q.122 Biceps are:

- A. Extensors
- B. Flexors
- C. Adductors
- D. Abductors

Q.123 Roots of a plant show which of the following?

- A. Positive phototropism and negative geotropism
- B. Negative tactic movement and positive tropic movement
- C. Positive geotropism of stem and roots
- D. Negative phototropism and positive geotropism

Q.124 Rapid movement of leaves of mimosa on touching is an example of?

- A. Tropic movements
- B. Growth movement
- C. Nastic movement
- D. Turgor movement

Q.125 Triceps are:

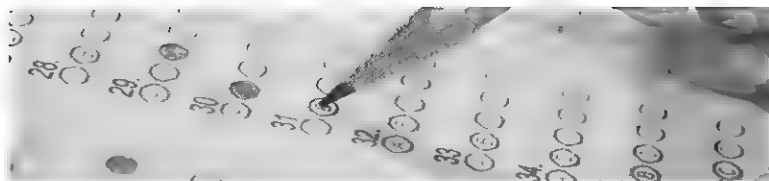
- A. Extensor muscles
- B. Flexor muscles
- C. Abductive muscles
- D. Strongest muscles

Q.126 Cranium contains how many bones:

- A. 2
- B. 4
- C. 8
- D. 14

Q.127 How many bones humans have in the vertebral column?

- A. 52
- B. 25
- C. 33
- D. 34



Q.128 Human eye muscles contract in:

A. 0.01 sec

C. 0.05 sec

B. 0.08 sec

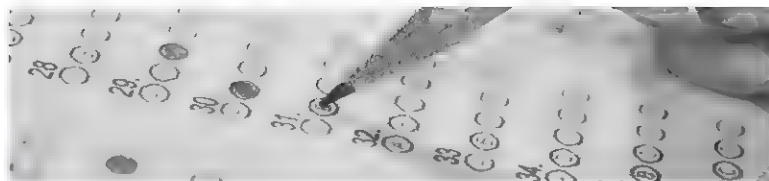
D. None of these



ANSWER KEY

SUPPORT AND MOVEMENT

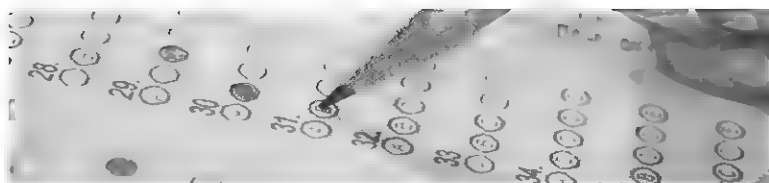
1	B	21	C	41	B	61	C	81	C	101	D	121	B
2	A	22	D	42	C	62	A	82	B	102	D	122	B
3	D	23	A	43	A	63	B	83	B	103	A	123	D
4	D	24	A	44	C	64	D	84	B	104	A	124	D
5	D	25	C	45	D	65	B	85	A	105	C	125	A
6	A	26	B	46	C	66	B	86	C	106	A	126	C
7	B	27	A	47	D	67	A	87	B	107	D	127	C
8	A	28	A	48	C	68	C	88	B	108	A	128	D
9	B	29	C	49	C	69	C	89	B	109	A		
10	B	30	B	50	B	70	D	90	B	110	B		
11	B	31	D	51	D	71	D	91	B	111	B		
12	C	32	B	52	D	72	B	92	B	112	A		
13	D	33	A	53	D	73	D	93	C	113	C		
14	B	34	A	54	B	74	B	94	C	114	A		
15	D	35	B	55	B	75	A	95	A	115	A		
16	C	36	A	56	B	76	D	96	A	116	B		
17	C	37	A	57	B	77	B	97	A	117	D		
18	D	38	B	58	C	78	C	98	A	118	A		
19	A	39	C	59	C	79	D	99	C	119	B		
20	A	40	A	60	D	80	B	100	A	120	A		



VARIATION AND GENETICS/INHERITANCE

Mendel's law of inheritance

- Q.1 How many pairs of homologous chromosomes are present in *Pisum sativum*?
A. 5 B. 6
C. 7 D. 8
- Q.2 A certain type of plant is only tall when it has a heterozygous genotype. If two heterozygous plants are crossed, what is the probability of their offspring will also be tall?
A. 25% B. 1
C. 50% D. 75%
- Q.3 A pure breeding tall pea plant was crossed to dwarf plant. What will be the frequency of dwarf plants in F_2 ?
A. 0.25 B. 0.5
C. 0 D. 1
- Q.4 Phenotypic ratio of F_2 generation of monohybrid cross:
A. 3:1 B. 9:3:3:1
C. 1:2:1 D. 9:1
- Q.5 What is the phenotypic ratio for a cross between a plant with blue flowers BB and a plant with white flowers bb?
A. 25% blue, 75% white B. 75% blue, 25% white
C. All white D. All blue
- Q.6 Composite of an organism's observable characters or traits is called:
A. Genotype B. Phenotype
C. Recombination D. Replication
- Q.7 In a dihybrid cross, what fraction of offspring will be homozygous for both traits?
A. $1/2$ B. $1/4$
C. $1/8$ D. $1/16$
- Q.8 Genotype ratio of Mendel's law of independent assortment is which of the following?
A. 3:1 B. 1:02:01
C. 9:3:3:1 D. None of these
- Q.9 Your neighbour has a flower garden in which there are red flowers and white flowers. These flowers are diploid organisms, and flower colour is an autosomal trait. The gene for red flowers (R) is dominant, while the gene for white flowers (r) is recessive. Which of the following is the genotype of a white flower?
A. RR B. rr
C. Rr D. Rr
- Q.10 Which of the following is heterozygote?
A. RR B. rr
C. Both A & B D. None of these
- Q.11 Which of the following represents a phenotype?
A. X-linked recessive B. Aa
C. Autosomal dominant D. Brown hair
- Q.12 Homozygous chromosomes include which of the following?
A. Diploid cells B. Polyploid cells
C. Both A and B D. None of these
- Q.13 One plant is homozygous dominant for purple flowers, and the other is homozygous recessive for white flowers. What fraction of the F_2 population will have white flowers?
A. $1/4$ B. $1/2$
C. $1/8$ D. $1/16$
- Q.14 A monohybrid cross yielded 3:1 in F_2 . What could be mode of inheritance?
A. Segregation B. Independent assortment
C. Both A and B D. None of these
- Q.15 In peas, the gene for yellow color (C) is dominant to the gene for green color (c). To determine the genotype of an unknown pea, what kind of kind of pea should you cross with it?
A. Another unknown green B. Any genotype
C. Homozygous dominant D. Homozygous recessive (cc)



- Q.16** Your neighbor has a flower garden in which there are red flowers and white flowers. These flowers are diploid organisms, and flower color is an autosomal trait. The gene for red flowers (R) is dominant, while the gene for white flowers (r) is recessive. Which of the following could be the genotype of a red flower?
A. Rr
B. RR, Rr, or rr
C. rr
D. RR or Rr
- Q.17** A scientist has discovered a new species of flower in which purple coloration is dominant to white. He wishes to know the genotype of a specific purple flower. Which of the following crosses would give him a definitive answer for the purple flower genotype?
A. Unknown purple x homozygous purple
B. Unknown purple x white
C. Unknown purple x unknown purple
D. None of these
- Q.18** In nature, garden pea is which of the following?
A. Cross fertilized
B. Cross pollinated
C. Self-fertilized
D. None of These
- Q.19** Which of the following characters of pea plant is dominant?
A. Yellow pods
B. White flowers
C. Wrinkled seeds
D. Axial flowers
- Q.20** Which of the following is monohybrid cross?
A. TTYy x Ttyy
B. TT x tt
C. Both A and B
D. None of these
- Q.21** During test cross, if all off springs are phenotypically dominant then parents are?
A. Heterozygous
B. One homozygous other heterozygous
C. Homozygous
D. None of these
- Q.22** A pure breeding tall plant was crossed with dwarf plant. What would be probability of "Tt" genotype in F₂?
A. 0.25
B. 0.5
C. Both A & B
D. None of these
- Q.23** Round shaped pea seed is crossed with wrinkled shaped seed. This refers to:
A. P₁ generation
B. F₁ generation
C. F₂ generation
D. F₃ generation
- Q.24** Number of gametes produced by an organism having genotype of RrPp:
A. 2
B. 3
C. 4
D. 5
- Q.25** What would be the color of flowers in F₁ generation when a 4'O clock plant having red colored flower is crossed with plant having white colored flower:
A. Half purple and half red
B. Half white and half red
C. All purple
D. All white
- Q.26** Mendel's law of inheritance were presented in:
A. 1861
B. 1865
C. 1892
D. 1857
- Q.27** Mendel studied seven pairs of traits of pea plant that were present on _____ chromosomes.
A. 4
B. 7
C. 8
D. 9
- Q.28** True breeding variety is produced by which of the following?
A. Cross fertilization
B. Self-fertilization
C. Both A and B
D. None of the above
- Q.29** A pea plant with yellow seed was crossed to a plant having green seeds. What will happen in F₁ if plants are true breeding?
A. Half seeds will be yellow
B. All seeds will be green
C. Both will be present in ration of 1:2:1
D. All seeds will be yellow
- Q.30** How many gametes are produced from genes of diploid organism which is heterozygous for 4 loci?
A. 4
B. 8
C. 12
D. 32
- Q.31** Mendel laid the foundation of:
A. Classical genetics
B. Modern genetics
C. Cell biology
D. Neo-Darwinism



Multiple alleles

- Q.32 ABO system has different phenotype on the basis of specific _____ on the surface of RBCs
A. Antibody
B. Antigen
C. Anti A-antigen
D. Anti O-antigen
- Q.33 ABO blood group system was discovered in:
A. 1811
B. 1901
C. 1801
D. 1911
- Q.34 A man with type A blood and a woman with type AB⁺ blood have a child. Which blood type is impossible for that child to have?
A. A⁻
B. B⁻
C. AB⁺
D. O⁻
- Q.35 ABO blood group system was first introduced by:
A. Landsteiner
B. Bernstein
C. Morgan
D. Fleming
- Q.36 ABO has how many phenotypes?
A. 3
B. 4
C. 6
D. 8
- Q.37 A man with type AB blood marries a woman with type A blood. Which of the following blood types might their sons inherit?
A. Type A only
B. Type B only
C. Type AH only
D. Type A, type B, or type AB
- Q.38 Assume that blood type is not a sex-linked trait. A mother with genotype "A/O" and a father with genotype "A/B" could not have a child with which blood type?
A. A
B. B
C. AB
D. O
- Q.39 Assuming that blood type is not a sex-linked trait, what is the probability that a mother with genotype "A/O" and a father with genotype "A/B" will have a child with type B blood?
A. 50%
B. 25%
C. 75%
D. None of these
- Q.40 A man with blood group A marries a woman of blood group "B". Both are heterozygous. What is the offspring's having phenotype "O"
A. 10%
B. 25%
C. 50%
D. 75%
- Q.41 Rh blood group system is:
A. Multiple allele
B. Polygenic
C. Both A and B
D. None
- Q.42 If father have blood group A and mother have blood group B then children can have:
A. A only
B. AB only
C. B only
D. A, B, AB, O all

Gene linkages and crossing over

- Q.43 The number of linkage groups in humans is?
A. 24
B. 23
C. 1/23
D. 1/24
- Q.44 Genes of same chromosomes are:
A. Linked
B. Non-linked
C. Always assort independently
D. Both B and C
- Q.45 Crossing over brings about:
A. Recombinant genes
B. New traits in species
C. Genetic recombination
D. New species

Sex linkages in *Drosophila*

- Q.46 In Morgan's experiment when males and females of F₁ generation mate with each other and produce F₂ generation. The number of red eyed males were:
A. 2059
B. 2459
C. 782
D. 1101
- Q.47 Colored eyes in male *Drosophila* is due to:
A. Hemizygous
B. Homozygous



C. Heterozygous

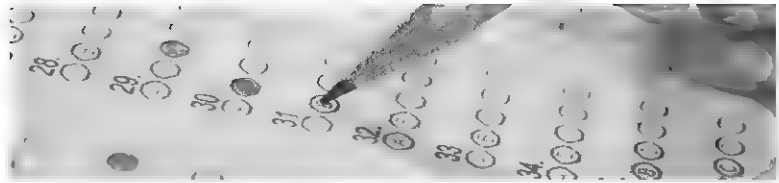
D. None

Sex linkage in human (Genetics of hemophilia)

- Q.48** A trait determines by a gene on the X chromosome is said to be:
A. Pseudoautosomal **B. Sex linked**
C. Both A & B D. None of the above
- Q.49** Haemophilia B is due to abnormality of factor?
A. VIII B. X
C. IX D. XI
- Q.50** Which of the following is not sex linked recessive trait?
A. Testicular feminization syndrome B. Color blindness
C. Haemophilia **D. Hypophosphatemic rickets**
- Q.51** When a hemophilia carrier woman marries a normal man, who among her offspring may be affected?
A. All her children B. Half of her daughters
C. All her daughters **D. Half of her sons**
- Q.52** Which traits cannot pass from father to all of his sons?
A. Sex-linked recessive
C. Y linked B. Autosomal
D. None of theses
- Q.53** It is a autosomal recessive allele:
A. Hemophilia a B. Hemophilia b
C. Hemophilia c D. Red monochromacy
- Q.54** Hemophilia is:
A. Mendelian disorder
C. Both A and B B. Chromosomal disorder
D. None of above
- Q.55** Traits passed form maternal grandfather to grandson:
A. X-linked dominant B. Y-linked
C. Autosomal **D. X-linked recessive**
- Q.56** Which of the following is inherited via an autosomal recessive allele?
A. Hemophilia B. Huntington's disease
C. Color-blindness **D. Cystic fibrosis**
- Q.57** For a single gene trait, a number of genetic disorders are caused when an individual inherits?
A. Two dominant alleles B. One dominant allele
C. One recessive allele **D. Two recessive alleles**
- Q.58** Which trait is passed directly from father to son?
A. Y linked
C. X linked dominant B. X linked
D. X linked recessive
- Q.59** Chances for a birth of male and female in humans:
A. 1:2 **B. 1:1**
C. 2:1 D. 2:2
- Q.60** A gamete without sex gamete is called:
A. Male gamete **B. Nullo gamete**
C. Advanced gamete D. None
- Q.61** Genes of baldness can express only in the presence of hormone:
A. Progesterone B. Estrogen
C. Aldosterone **D. LH**
- Q.62** Defective genes are present on X chromosome. It will normally be transmitted in male off springs by:
A. Father **B. Mother**
C. Segregation D. Mutation
- Q.63** A single ovum of human being contains:
A. X chromosome
C. Y chromosome B. XX chromosome
D. May be all
- Q.64** How many sex chromosomes are present in human?
A. 2
C. 1 B. 3
D. 4

Out of Syllabus

- Q.65** Which of the following is male determining gene in humans?



- A. Tfm
C. Both A and B
- Q.66** Number of chromosomes in grass hopper is:
A. Male: 23, Female: 24
C. Male: 23, Female: 23
- Q.67** Male is haploid in:
A. Humans
C. Birds
B. *Drosophila*
D. Grasshopper
- Q.68** ZZ/ZW type of sex determination is found in:
A. Humans
C. Moths
B. Fruit fly
D. Grasshopper
- Q.69** Number of autosomes in liver cells of humans:
A. 44
C. 22
B. 23
D. 46
- Q.70** In males, the gene for colour blindness is located in _____.
A. X-chromosome
C. Both X and Y chromosomes
B. Y-chromosome
D. Either X or Y chromosome
- Q.71** Which of the following is called the sex-linked disease?
A. Leukemia
C. Malignancy
D. Colour blindness
B. Alzheimer's
- Q.72** How many sex chromosomes are present in a human being?
A. 1 pair
C. 3 pairs
B. 2 pairs
D. 4 pairs
- Q.73** Skin colour in man is controlled by how many pairs of genes:
C. 3
A. 1
B. 2
D.
- Q.74** Inheritance in man is traced by which of the following?
A. Mathematical method
C. Genetic method
D. Pedigree method
B. Statistical method
- Q.75** In which organisms males are haploid?
A. Aphids
C. Butterfly
D. Honey bee
B. Mosquito
- Q.76** Visible genetic traits include which of the following?
A. Hair color
C. Number of limbs
D. All of these
B. Eye color
- Q.77** All of the following are continuously varying traits except:
A. Kernel color in wheat
C. Height in humans
D. Tongue rolling in humans
B. Skin color in humans
- Q.78** Gene for blue opsin is present on which chromosome?
B. 7
A. 6
C. 8
D. 11
- Q.79** A woman is a carrier for a sex-linked disorder. She marries a man whose father had the disorder, and whose mother did not. The man is unaffected. If they have a child, what is the probability that the child is also a carrier?
A. 25%
C. 75%
B. 50%
D. 1%
- Q.80** Red-green colorblindness is an X-linked recessive disorder. Jacob's paternal grandfather and father are both colorblind, but his mother has two normal alleles. What is the probability that Jacob is red-green colorblind?
A. 0%
C. 50%
B. 25%
D. 75%
- Q.81** Bombay phenotype shows:
A. Dominance
C. Epistasis
B. Pleiotropy
D. Polygenic inheritance
- Q.82** In males, gene for color blindness is present on:
C. X chromosome
A. Y chromosome
B. Autosome 11
D. Autosome 1



- Q.83** The phenomenon in which the effect of one allele in heterozygous genotype completely masks the effect of other is called:
A. Codominance
B. Dominance
C. Incomplete dominance
D. Complete dominance
- Q.84** Inbreeding increases:
A. Heterozygous
B. Genetic diversity
C. Genetic linkage
D. Homozygous
- Q.85** Interaction between genes occupying different loci is known as?
A. Dominance
B. Pleiotropy
C. Epistasis
D. None of these
- Q.86** Baldness is most frequent in which of the following?
A. Men
B. Women
C. Both A and B
D. Children
- Q.87** Such inheritance in which traits vary quantitatively is:
A. Continuously varying trait
B. Incomplete dominance
C. Test cross
D. Test cross
- Q.88** If a heterozygous individual shows the complete effect of both alleles, the type of inheritance would be?
A. Complete dominance
B. Non dominance
C. Incomplete dominance
D. Codominance
- Q.89** A human cell from the ovary has 22 chromosomes and an X chromosome. It is which of the following?
A. Egg
B. Sperm
C. Somatic cell
D. Gamete
- Q.90** The ordered list of loci known for a particular genome is called:
A. Gene map
B. Loci
C. Alleles
D. Chromosomes
- Q.91** Characteristics feature of male *Drosophila* is:
A. Sex combs on back legs
B. Sex combs on front legs
C. Sex combs on middle legs
D. None of them
- Q.92** Mutations in the sequence of genes are carried by only:
A. Locus
B. Population
C. Allele
D. Genetic sequence
- Q.93** Most protein coding genes are found in:
A. Repetitive DNA
B. RNA
C. Single copy DNA
D. None of these
- Q.94** A woman receives his X chromosome from:
A. His mother only
B. Both her mother and her father
C. His father only
D. Extra nuclear DNA in her mother's egg
- Q.95** If replication was completely conservative then?
A. One heavy and one light strand would be seen
B. Both heavy strands would be seen
C. Both light strands would be seen
D. None of these
- Q.96** All of the following are continuously varying traits except?
A. Kernel colour in wheat
B. Skin colour in humans
C. Height in human
D. Tongue rolling in humans
- Q.97** Mating between relatives is called which of the following?
A. Ex breeding
B. Breeding
C. Inbreeding
D. Outbreeding
- Q.98** Mating with non-relatives is known as?
A. Inbreeding
B. Breeding
C. Outbreeding
D. None of these
- Q.99** The gene for muscular dystrophy is X-linked. A female carrier and an unaffected male have one daughter together that is homozygous. The daughter has a son with unaffected male. What is the probability that the son will not be affected?
A. 25%
B. 50%
C. 75%
D. 0
- Q.100** Gametes consist of:



- A. Two alleles
C. No allele
- Q.101** A male and female have 6 daughters. Chances of next daughter will be:
A. 10
C. 50
B. 60
D. 100
- Q.102** Egg is determinant of offspring's gender in:
A. Man
C. Grasshopper
B. *Drosophila*
D. Butterfly
- Basic Definition**
- Q.103** If both the alleles are same with respect to genes then they are called:
A. Heterozygous
C. Homozygous
B. Unicellular
D. None of these
- Q.104** The process of determining the locus for particular biological traits includes:
A. Replication
C. Gene Mapping
B. Recombination
D. None
- Q.105** The set of all genes in any population is termed as:
A. Population pool
C. Gene pool
B. Species pool
D. All of these
- Q.106** A fully expressed allele is referred to as:
A. Dominant
C. Homozygous
B. Recessive
D. Heterozygous
- Q.107** A group of interbreeding individuals belonging to a particular species and sharing a common geographic area is called:
A. Community
C. Race
B. Population
D. Family
- Q.108** Filial is a Latin word. It means which of the following?
A. Spring
C. Progeny
B. Issue
D. None of these
- Q.109** Pink color in flower is:
A. Phenotype
C. Genotype
B. Genome
D. Trait
- Q.110** Alternative form of a gene is called:
A. Genome
C. Allele
B. Gene pool
D. Genetics
- Q.111** The position of a gene on chromosome is called:
A. Locus
C. Position
B. Arm
D. Location
- Q.112** The gene which cannot be determined by observing the organism is?
A. Dominant
C. Phenotype
D. Recessive
B. Allele
- Q.113** Which term means "same alleles"?
A. Heterozygous
C. Homozygous
B. Hybrid
D. None of them
- Q.114** Chromosomes that have different alleles of a given gene at locus is called:
A. Homozygous
C. Y chromosomes
D. Heterozygous
B. Specialization
- Q.115** To form a female zygote, the sperm cell must contribute which chromosome?
A. X
C. Y
B. 2X
D. XY
- Q.116** Gene is the molecular unit of which of the following?
A. DNA
C. Heredity
B. RNA
D. Genotype
- Q.117** Organisms that have one copy of each gene on each chromosome are:
A. Haploid
C. Unicellular
B. Diploid
D. None of these
- Q.118** Population genetics focus on:
A. Inherited traits
C. Quantitative traits
B. Qualitative traits
D. All of these





ANSWER KEY

VARIATIONS AND GENETICS

1	C	21	C	41	A	61	D	81	C	101	C
2	D	22	B	42	D	62	B	82	C	102	D
3	A	23	A	43	B	63	A	83	D	103	C
4	A	24	C	44	A	64	A	84	D	104	C
5	D	25	C	45	C	65	B	85	C	105	C
6	B	26	B	46	D	66	A	86	A	106	A
7	C	27	A	47	A	67	D	87	A	107	B
8	D	28	B	48	B	68	C	88	D	108	C
9	B	29	D	49	C	69	C	89	A	109	A
10	D	30	D	50	D	70	A	90	A	110	C
11	D	31	A	51	D	71	D	91	B	111	A
12	A	32	B	52	A	72	A	92	D	112	D
13	A	33	B	53	C	73	C	93	C	113	C
14	A	34	D	54	A	74	D	94	B	114	D
15	D	35	A	55	D	75	D	95	D	115	A
16	D	36	B	56	D	76	D	96	D	116	C
17	D	37	D	57	D	77	D	97	C	117	A
18	C	38	D	58	A	78	B	98	C	118	A
19	D	39	B	59	B	79	A	99	D		
20	B	40	B	60	B	80	A	100	B		



MISCELLANEOUS QUESTIONS

- Q.1** Which of the following statements is correct distinction between autotrophs and heterotrophs
 A. Only heterotrophs require chemical compounds from the environment
 B. Cellular respiration is unique to heterotrophs
 C. Only heterotrophs have mitochondria
D. Autotrophs but not heterotrophs can nourish themselves with nutrients that are entirely inorganic
- Q.2** Growth and development of plant cells is the role of?
 A. Parenchymatous cells
 B. Chlorenchymatous cells
C. Meristematic cell
 D. Sclerenchymatous cells
- Q.3** Vascular cambium initially appears as actively dividing cells between?
 A. Primary xylem and secondary xylem
 B. Primary xylem and secondary phloem
 C. Secondary xylem and secondary phloem
D. Primary xylem and primary phloem
- Q.4** Biorhythms are also called?
 A. Diurnal tempo
 B. Diurnal rhythms
 C. Diurnal time
 D. All of these
- Q.5** Platypus and panda are all representatives of which of the following?
 A. Homoeothermic
 B. Poikilothermic
 C. Hyperthermic
D. None of these
- Q.6** Which statement is incorrect about ethylene production?
 A. Climacteric is burst of respiratory activity in fruit ripening
 B. It is associated with ethane production
C. It helps in fruit ripening
 D. It helps in fruit set
- Q.7** What is the chemical characteristic of auxins?
 A. Indole propionic acid
 B. Indole carboxylic acid
 C. Indole acetaldehyde
D. Indole acetic acid
- Q.8** Gibberellins may be substituted for which color of light?
A. Red
 B. Blue
 C. Green
 D. White
- Q.9** Auxins are responsible for the promotion and growth of roots from?
 A. Layering
 B. Calluses
 C. Cutting
D. Both B and C
- Q.10** Cytokine's delay the aging of _____ leaf crops such as cabbage and lettuce.
 A. Attached
 B. Delayed
C. Fresh
 D. Open
- Q.11** Move in response to chemical signals is termed as:
A. Chemotaxis
 B. Chemonolysis
 C. Chemography
 D. Chemosynthesis
- Q.12** Which one is not a day neutral plant?
 A. Cotton
 B. Maize
 C. Cucumber
D. Tobacco
- Q.13** Klinefelter's syndrome:
 A. One X chromosome is missing
 B. Sex chromosome fails to segregate
C. Additional sex chromosome is present
 D. None of these
- Q.14** Developing seeds are rich source of which of the following?
 A. Auxins
 B. Gibberellins
 C. Cytokinins
D. All of these
- Q.15** Resumption of normal growth by a dormant embryo is called?
 A. Seed dormancy
 B. Fruit ripening
C. Germination
 D. All of these
- Q.16** The clear fluid present in the anterior chamber of eye is?



- A. Optic humor
C. Vitreous humor
D. Aqueous humor
- Q.17 The place of attachment of leaf with the shoot is called?**
A. Pith
C. Pulvinus
B. Pit
D. All of these
- Q.18 Humans regulate their internal body temperature within a very narrow range. This is an example of?**
A. Homeostasis
C. Genetics
B. Evolution
D. Metabolism
- Q.19 Critical day length for cocklebur is which of the following?**
A. 8.5 hrs.
C. 14 hrs.
B. 10 hrs.
D. 15.5 hrs.
- Q.20 Terrestrial animals can tolerate dehydration by:**
A. Anhydrobiosis
C. Thermoregulation
B. Sweating
D. None
- Q.21 It is correct about metaphase:**
A. Chromosome is thickest and largest
B. Chromosome is thinnest and shortest
C. Chromosome is thinnest and largest
D. Chromosome is thickest and shortest
- Q.22 Each chromosome of a bone marrow cell has how many chromatids during anaphase?**
A. No chromatid
C. 1 chromatid
B. 2 chromatids
D. Several chromatids
- Q.23 Which symbiont helps in uptake of phosphorus and sulphur?**
A. Bacteria
C. Fungi
B. Virus
D. Protista
- Q.24 Who proposed chromosomal theory of inheritance?**
A. Sutton and Boveri
C. Morgan and Mendel
B. Margulis and Schwartz
D. Johannsen and Cuvier
- Q.25 The idea that opposed the idea of abiogenesis was proposed by :**
A. Rudolph Virchow
C. Robert Hooke
B. Robert Brown
D. Lorenz Oken
- Q.26 Which of them excretes in form of uric acid?**
A. Birds
C. Frog
B. Human
D. None of these
- Q.27 What is the significance of endospores?**
A. They allow fungi to survive in extreme climates
B. They allow gram-negative bacteria to reproduce
C. They allow fungi to store nutrients that can survive extreme conditions
D. They are produced by gram-positive bacteria which can survive extreme conditions

ANSWER KEY



MISCELLANEOUS QUESTIONS

1	D	21	D
2	C	22	C
3	D	23	C
4	B	24	A
5	D	25	A
6	C	26	A
7	D	27	D
8	A		
9	D		
10	C		
11	A		
12	D		
13	C		
14	D		
15	C		
16	D		
17	C		
18	A		
19	A		
20	A		